Post

Operations

Evaluation

Tool

Version 2.1

USING POET

DRAFT

TABLE OF CONTENTS

Introduction

The Post Operations Evaluation Tool (POET) is a prototype analysis system developed by Metron, Cognitive Systems Engineering and AMT Systems Engineering under the FAA's Collaborative Decision Making (CDM) program with a focus on supporting analysis of collaborative routing problems. These include identifying areas of National Air Space (NAS) congestion or inefficiency. Using a variety of performance metrics (such as departure, en route and arrival delays, and filed versus actually flown flight tracks), POET allows users to explore how the NAS functions.

The POET server is currently installed at the ATCSCC with access to archived ETMS data that is updated regularly. This server maintains a "rolling" 45-day data set spanning the entire NAS for ready analysis using POET. A secondary server is located at Metron, Inc. for users without a connection to the FAA's network. With POET, users can easily access, filter, and visualize the flight information contained in the ETMS data archive using a variety of interactive charts, tables, and geographic displays. Analysis results can be aggregated into a variety of bins, including grouping by departure and/or arrival airports, filed arrival fixes, departure/arrival times, NRP/non-NRP, departure and/or arrival centers, user class and many more.

POET has a built-in collection of powerful data mining tools to recognize patterns and trends within the data. Some of the patterns currently recognized include circular airborne holding, arrival fix swaps and flown routes that differ significantly from the routes filed. POET has the further capability to integrate FAA data with airline-provided flight data (when available), to give a more complete picture of what is happening in the NAS.

Technical Support

For questions about POET or further information regarding the program, contact:

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Reporting Errors

There are several ways you can report a bug or error in POET. Note that when you report a POET bug or error via email, you are advised to send the corresponding log file by attaching it to your email.

1. Contact Namita Arora or Phil Smith directly using the contact information listed above.

2. Report a POET bug or error via the POET website: http://www.amtsys.com/poet/home.htm.

3. Open POET. From the Home window, click **Bug Report**. This will open your default Internet browser and take you to the POET website, where you can fill out a bug report.

Text Conventions

If You See This	It Means
+	If you see the + symbol, you must perform two actions at once to perform a function in the software. For example, Ctrl+click indicates that you need to click the mouse once while holding down the ctrl key on your keyboard.
>	This symbol between two words indicates a menu option. For example File > Save indicates that you need to choose the Save option under the File menu.
Double-click	Click your left mouse button twice to complete an action.

Getting Started

Open POET

You can start POET in one of 3 ways:

1. Select the **POET shortcut icon** from your computer desktop.

2. Select **POET** from your **Program Menu**.

3. Double-click the **poet.exe** file in your POET program file directory.

When you open POET, the **POET Login** window (Figure 1) appears. Fill in your **User Name** and **Password**. The User Name and Password should be given to you at the time you install POET. Select your POET **Data Source** and the **Search Type** (Default is currently the only Search Type listed in this field) using the available pull-down menus.

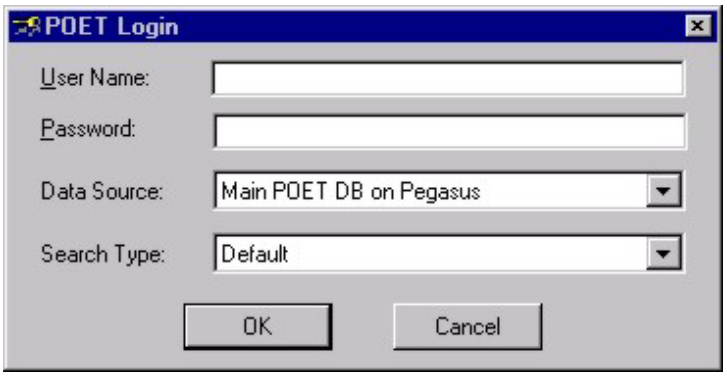


Figure 1: POET Login Screen

User name, password, and data source vary with each user and determine your level of access to the database. If you are not provided with the necessary login information when you install POET, please contact Technical Support (p. 1).

Close POET

Closing POET will shut down the software program. If you wish to close POET, you can do so in one of three ways:

- Select **File > Exit**

- Close the POET toolbar by clicking the **X** icon in the upper corner of the window.

- Click **Exit POET** on the POET Home window or any Search Builder Window.

Choose Your POET Function

Using POET, you can view flight information by conducting a *search* for flights that meet specific criteria, generating a *summary report* that includes specific flights, or pulling up one of the *advanced charts*. Once you choose the function you need, a Search Builder Window for that particular function will appear. In the Search Builder Window, you will be able to define parameters for your report, search, or advanced charts. These functions are discussed in future chapters.

These POET functions are all available from **POET Home**, the first window you see when you open POET (Figure 2).

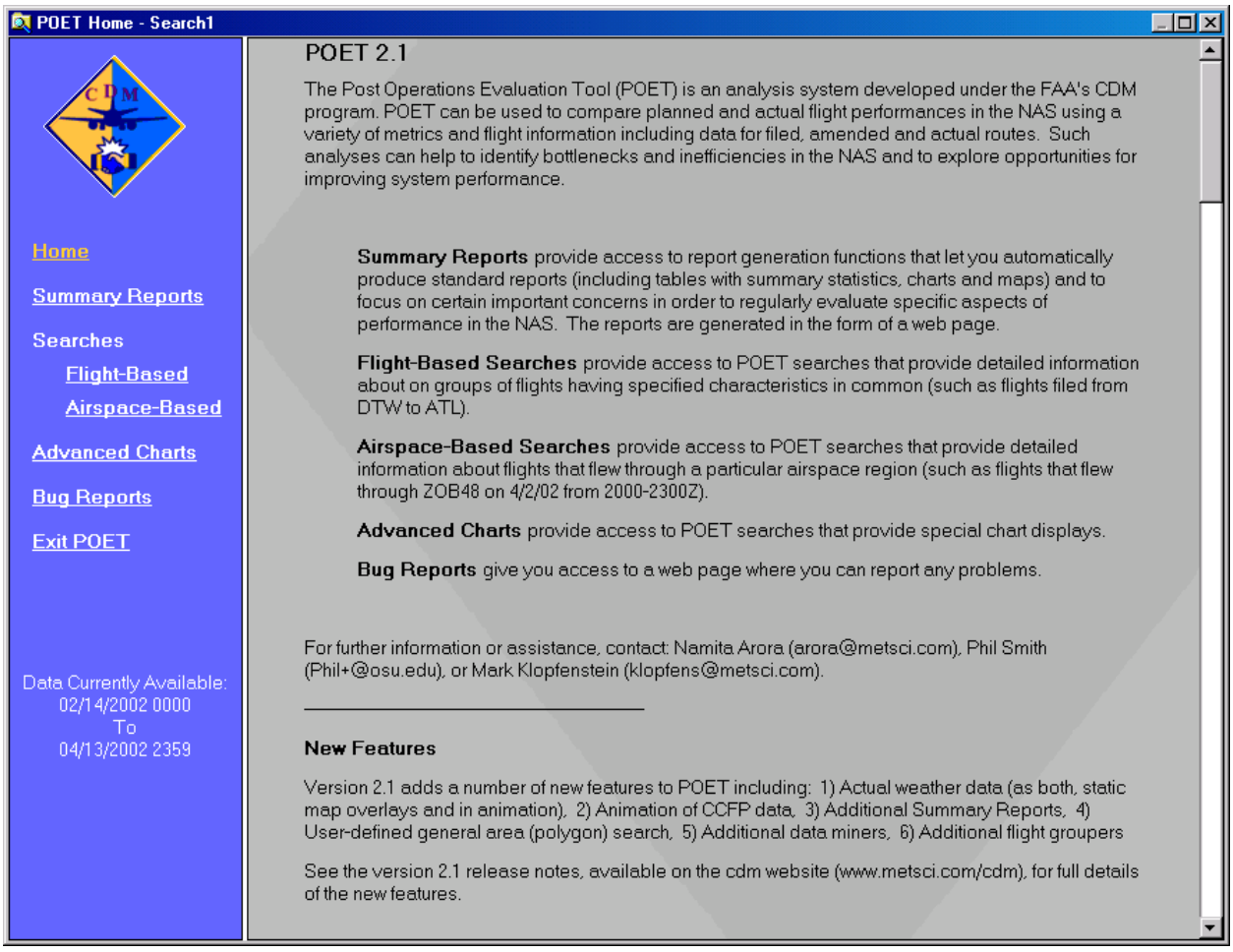


Figure 2: POET Home

The POET Display

When you first log on to POET, you should see **POET Home** (Figure 2). While you work in POET, the windows displayed will change according to the function you are using. However, all windows in POET can be sized and closed in the same way. When POET displays multiple windows, you can also choose the order in which you display the windows. This section discusses sizing and arranging windows in POET.

Show/Hide Toolbar

The POET Toolbar is located directly below the main POET Menus. The Toolbar provides several shortcuts to commonly used POET functions.

Figure 3: POET Toolbar

You can choose to show or hide the Toolbar in the POET display.

1. Select **View > Toolbar**. When the Toolbar option is checked, the Toolbar is visible. When this option is not checked, the Toolbar is hidden.

2. **Right-click** anywhere in a Search Results Table and select **Toolbar** from the pop-up menu. When the Toolbar option is checked, the Toolbar is visible. When this option is not checked, the Toolbar is hidden.

3. Use POET's configuration file (poet.ini in your POET directory) to change the default setting for the Toolbar. In the configuration file, set the value next to "Toolbar" to "True" to show the Toolbar when you open POET. Set the value next to "Toolbar" to "False" to hide the Toolbar when you open POET. See Figure 4.

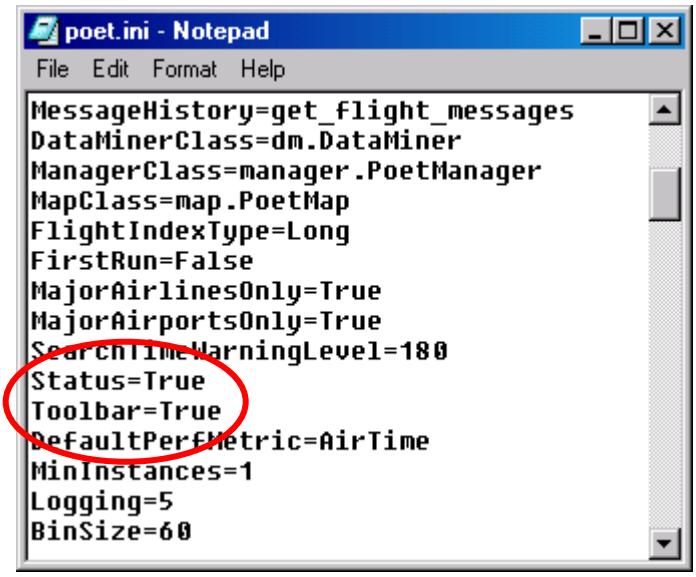


Figure 4: POET Configuration File With Toolbar and Status Bar Set to "True"

Show/Hide Status Bar

The POET Status Bar is located directly below the POET Toolbar. The Status Bar indicates the progress of POET functions.

You can choose to show or hide the Status Bar in the POET display.

4. Select **View > Status Bar**. When the Status Bar option is checked, the Status Bar is visible. When this option is not checked, the Status Bar is hidden.

5. **Right-click** anywhere in a Search Results Table and select **Status Bar** from the pop-up menu. When the Status Bar option is checked, the Status Bar is visible. When this option is not checked, the Status Bar is hidden.

6. Use POET's configuration file (poet.ini in your POET directory) to change the default setting for the Status Bar. In the configuration file, set the value next to " Status" to "True" to show the Status Bar when you open POET. Set the value next to " Status" to "False" to hide the Status Bar when you open POET. See Figure 4.

Sizing Windows

Maximize

To maximize a window, click the maximize icon in the upper right corner of the window. The maximize icon is usually a large square. If the window is already maximized, the icon will be grayed out.

Figure 5: Maximize

Minimize

To minimize a window, click the minimize icon in the upper right corner of the window. The minimize icon is usually an underscore (_). If the window cannot be minimized, this option will be grayed out or will not appear on the window.

Figure 6: Minimize

You can restore a minimized window to its original size by clicking the window icon on your computer screen. Windows or NT users will find the window icons displayed as labeled buttons along the bottom of the computer screen.

Custom Size

You can size many windows in POET by dragging the border of the window with your cursor. This allows you to make the window as large or small as you need. Note, though, that not all windows can change size. If your cursor changes to a double-arrow along the border of a window, you can drag the arrow to size the window. If your cursor does not change when you place it on a window border, that window cannot be resized.

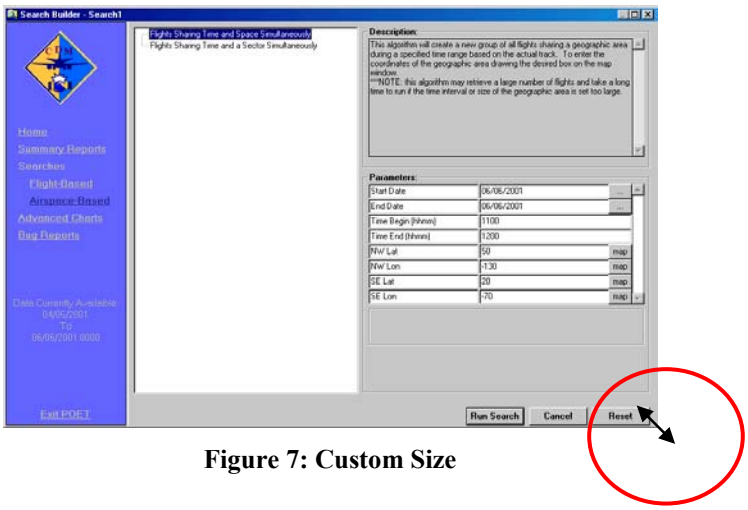


Figure 7: Custom Size

Arranging Windows

When multiple windows are displayed in POET (i.e. when viewing Search Results), you have a choice of how to arrange the windows: **POET Default**, **Cascade**, **Tile Horizontal**, or **Tile Vertical**.

Poet Default

When multiple windows open simultaneously, they are automatically set to display in the POET Default manner (see Figure 8). If you change the window arrangement, you can always reset the windows to the default setting by selecting **Window > Default Window Arrangement**.

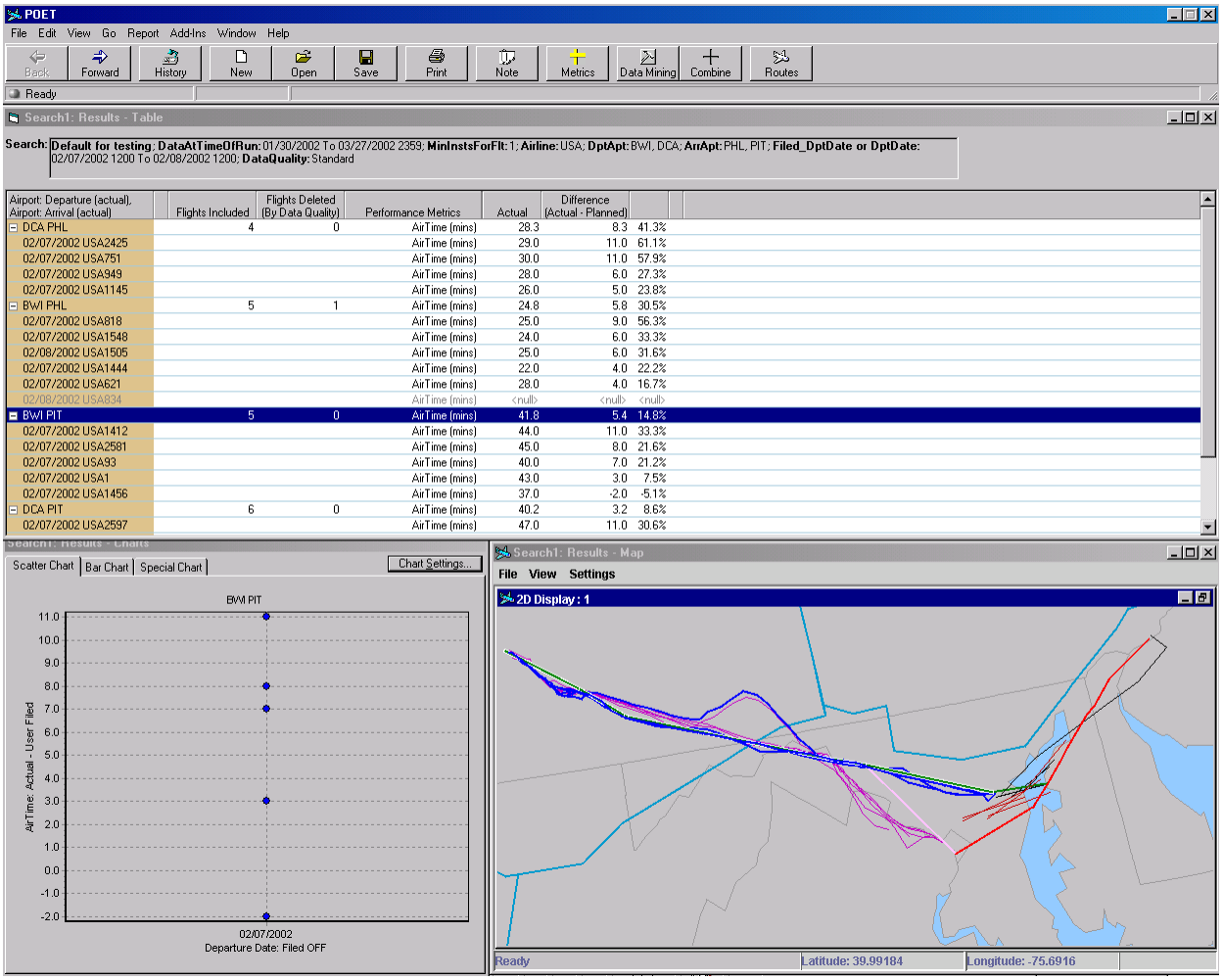
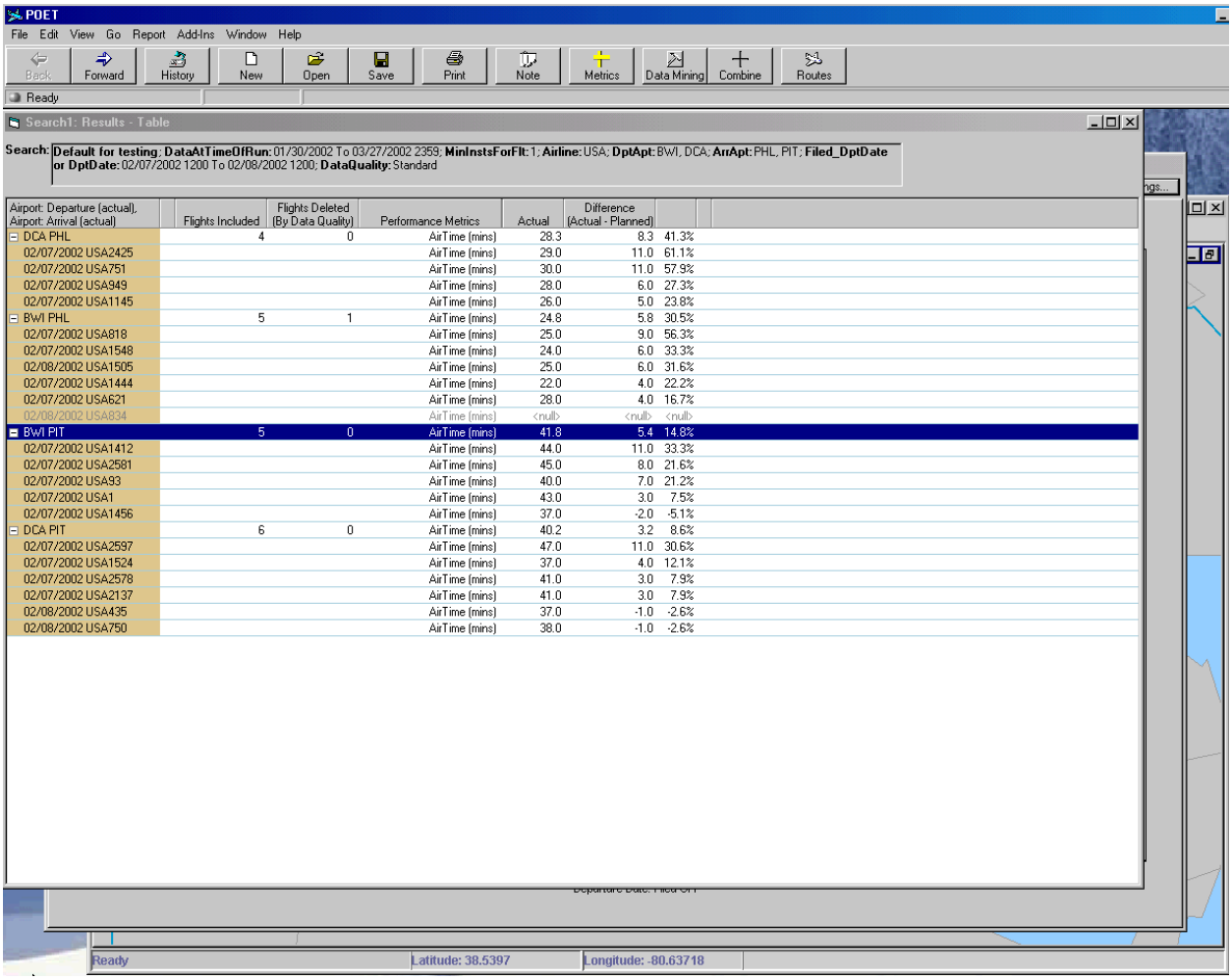


Figure 8: POET Default Window Display

Cascade

The Cascade option positions the windows behind one another on your screen. You can access each window, no matter what its position on the screen, by clicking anywhere on the visible portion of its title bar. To Cascade the windows, select **Window > Cascade** (Figure 9).



Airport: Departure (actual), Airport: Arrival (actual)	Flights Included	Flights Deleted (By Data Quality)	Performance Metrics	Actual	Difference (Actual - Planned)	
DCA PHL	4	0	AirTime (mins)	28.3	8.3	41.3%
02/07/2002 USA2425			AirTime (mins)	29.0	11.0	61.1%
02/07/2002 USA751			AirTime (mins)	30.0	11.0	57.9%
02/07/2002 USA949			AirTime (mins)	28.0	6.0	27.3%
02/07/2002 USA1145			AirTime (mins)	26.0	5.0	23.8%
BWI PHL	5	1	AirTime (mins)	24.8	5.8	30.5%
02/07/2002 USA818			AirTime (mins)	25.0	9.0	56.3%
02/07/2002 USA1548			AirTime (mins)	24.0	6.0	33.3%
02/08/2002 USA1505			AirTime (mins)	25.0	6.0	31.6%
02/07/2002 USA1444			AirTime (mins)	22.0	4.0	22.2%
02/07/2002 USA621			AirTime (mins)	28.0	4.0	16.7%
02/08/2002 USA834			AirTime (mins)	<null>	<null>	<null>
BWI PIT	5	0	AirTime (mins)	41.8	5.4	14.8%
02/07/2002 USA1412			AirTime (mins)	44.0	11.0	33.3%
02/07/2002 USA2581			AirTime (mins)	45.0	8.0	21.6%
02/07/2002 USA93			AirTime (mins)	40.0	7.0	21.2%
02/07/2002 USA1			AirTime (mins)	43.0	3.0	7.5%
02/07/2002 USA1456			AirTime (mins)	37.0	-2.0	-5.1%
DCA PIT	6	0	AirTime (mins)	40.2	3.2	8.6%
02/07/2002 USA2597			AirTime (mins)	47.0	11.0	30.6%
02/07/2002 USA1524			AirTime (mins)	37.0	4.0	12.1%
02/07/2002 USA2578			AirTime (mins)	41.0	3.0	7.9%
02/07/2002 USA2137			AirTime (mins)	41.0	3.0	7.9%
02/08/2002 USA435			AirTime (mins)	37.0	-1.0	-2.6%
02/08/2002 USA750			AirTime (mins)	38.0	-1.0	-2.6%

Figure 9: Cascade Window Arrangement

Tile Horizontal

You can choose to tile the windows horizontally. This means that the windows will be stacked up in three segments on your screen. You can view each of the windows in its entirety. To apply the Tile Horizontal arrangement, select **Window > Tile Horizontal** (Figure 10).

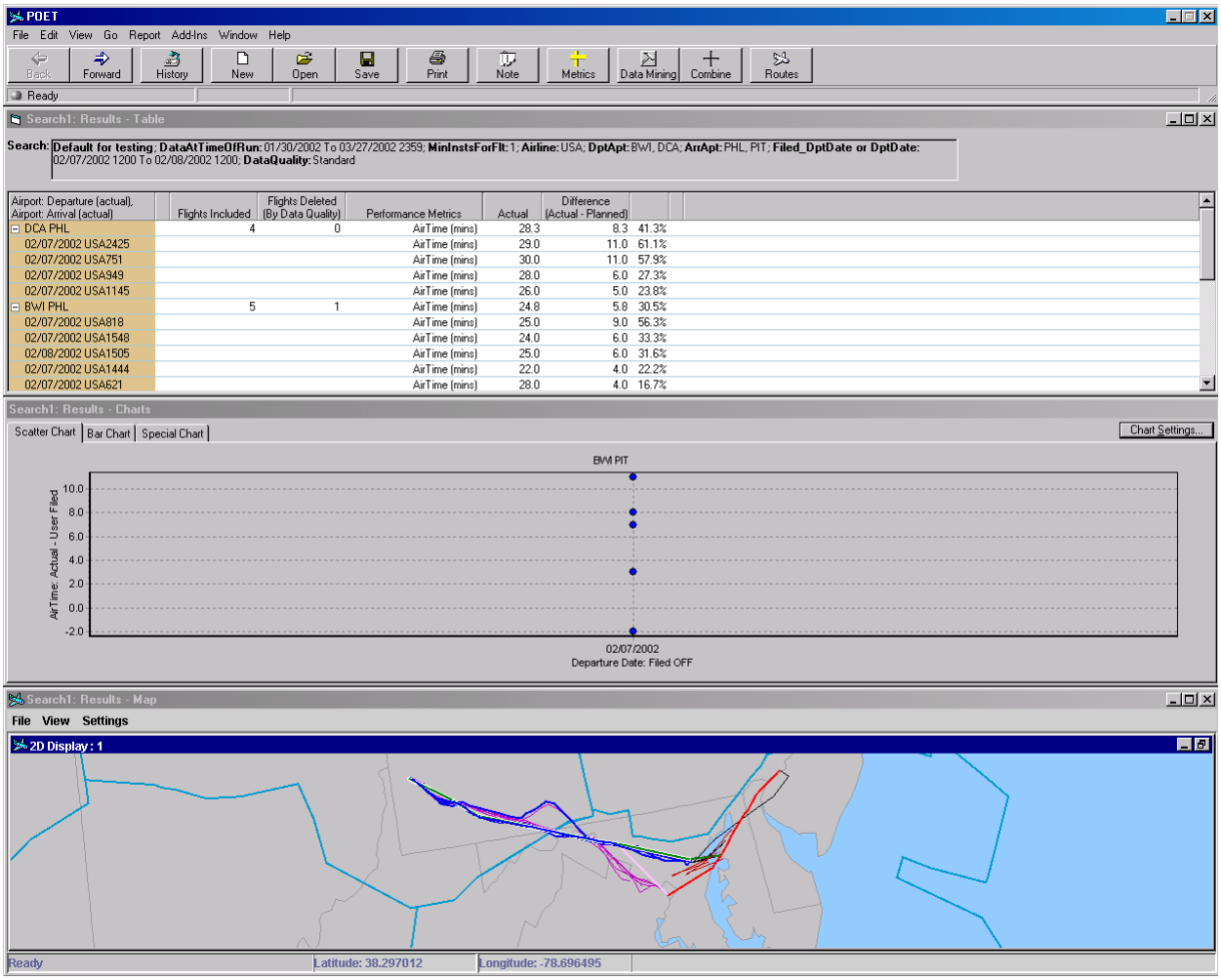


Figure 10: Tile Horizontal Window Arrangement

Tile Vertical

You can also choose to tile the windows vertically. This means that the windows will be on top of one another on your screen. You can view each of the windows in its entirety. To apply the Tile Vertical arrangement, select **Window > Tile Vertical** (Figure 11).

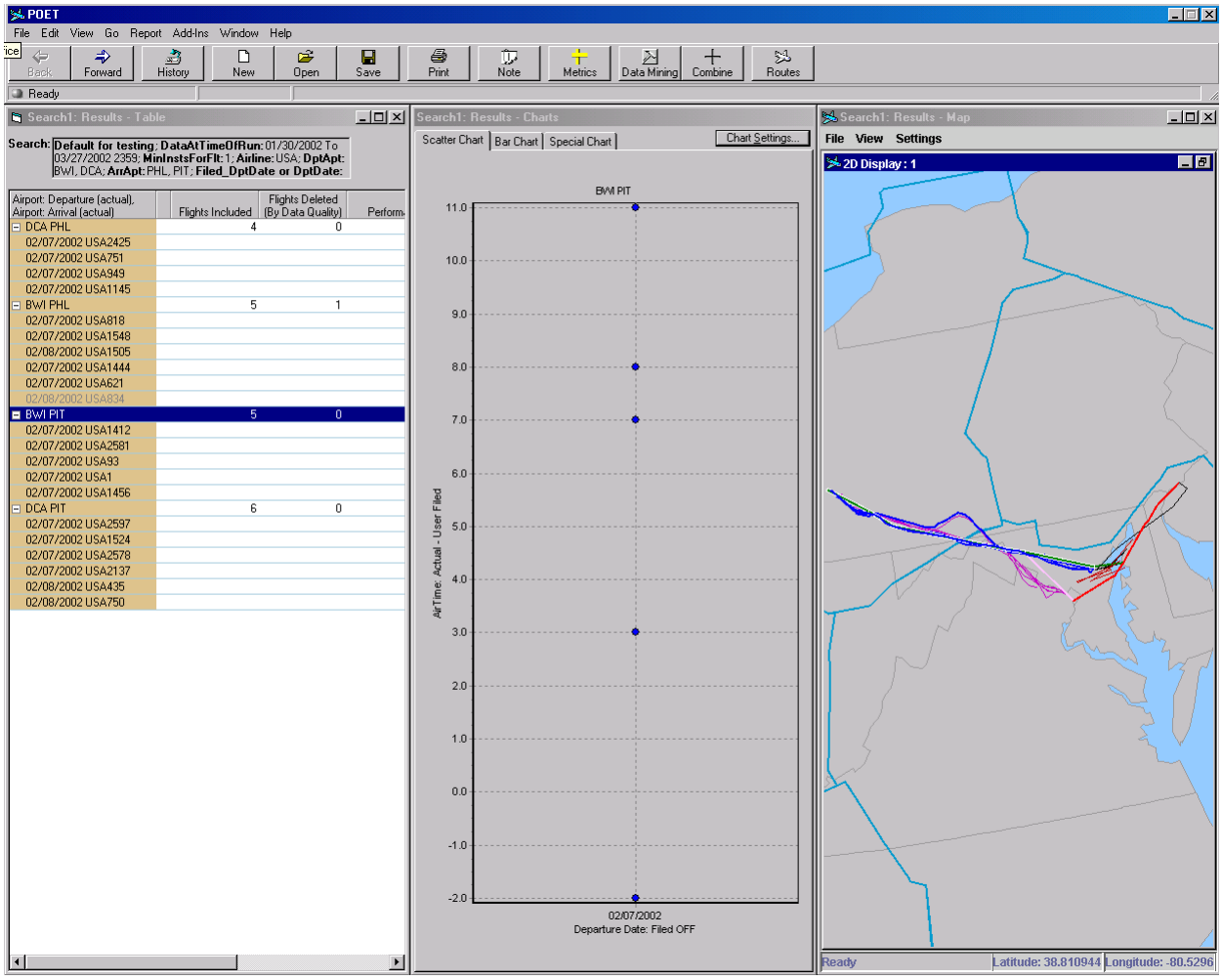


Figure 11: Tile Vertical

Summary Reports

The **Summary Report** function in POET provides a shortcut to generating a report from a search. Instead of first having to run a search and build a report page by page, you can use the Summary Report option to access a list of pre-defined reports. You select the report and define report parameters. POET conducts a search for flights that meet the report parameters and automatically generates the report.

You will see the search results, including a table, chart, and map. Once the search results are generated, POET generates the report in HTML. The report automatically opens in your default Internet browser and contains tables with summary statistics, charts, and maps.

The Summary Report Display

Summary Reports are generated in HTML format. When you generate a Summary Report, POET automatically opens your report in your default Internet browser.

The first page of your report is the **Summary**, which summarizes the report type and its parameters (Figure 12).

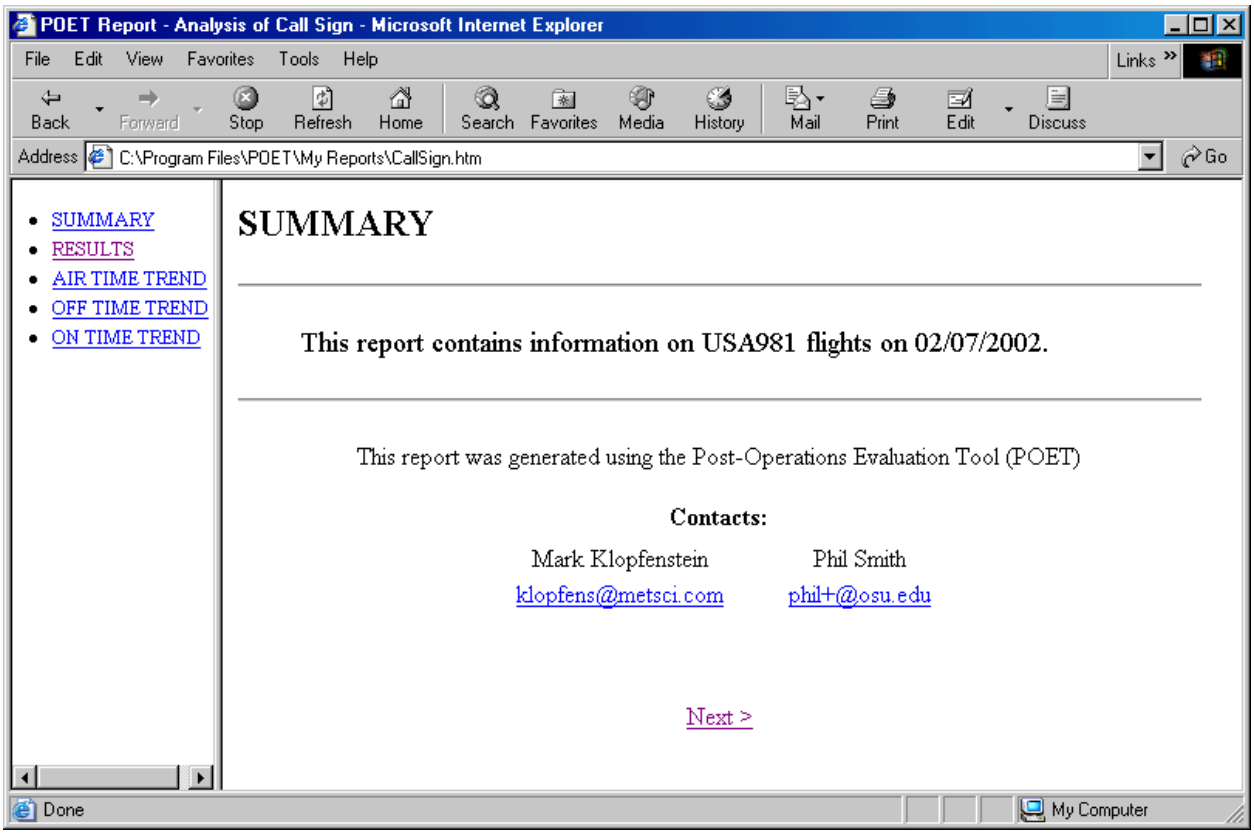


Figure 12: Page 1 of a Summary Report

The left frame of the Summary Report lists the other pages in the report. Click any of the page names to jump to that page in the report. In Figure 12, there are several pages you can view: Summary, pages for

each of the fixes, and Results. You are already viewing the Summary page. When you click **Results**, the complete table of flights that match your report parameters appears (see Figure 13).

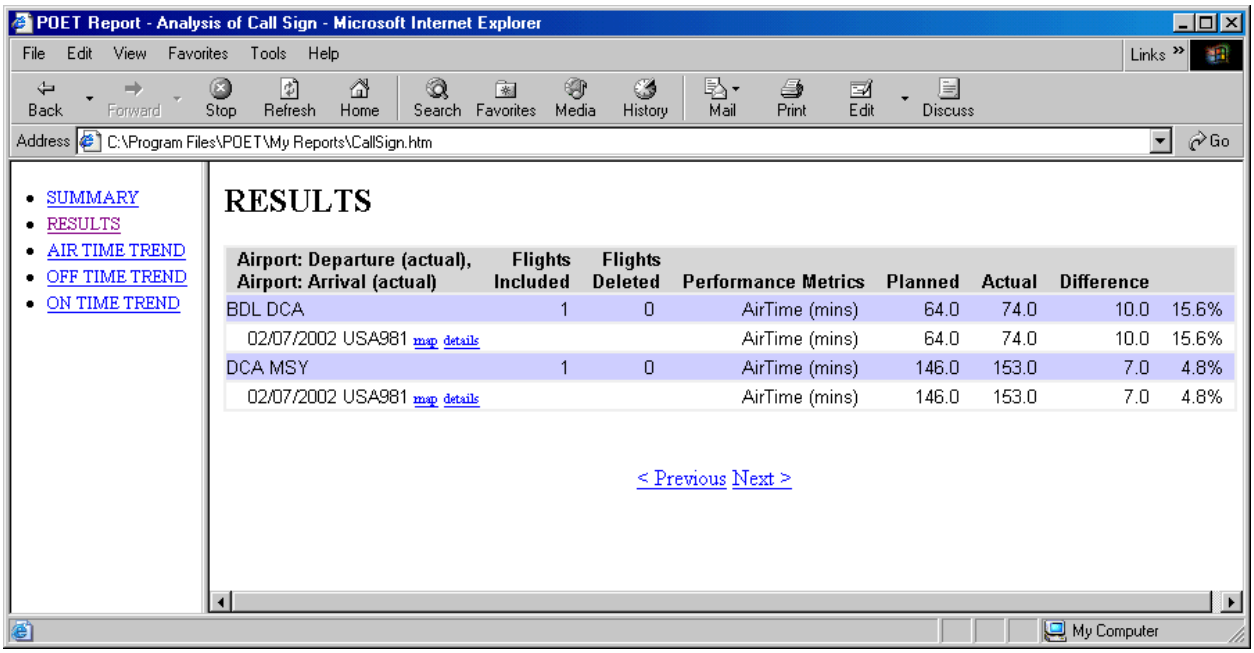


Figure 13: The Flights Page in a Summary Report

The Results page allows you to access charts and maps from the table. A chart or map can graphically illustrate the air traffic pattern you choose to analyze. Click any link to a Chart or Map to pull up a graphic for that flight group (see Figure 14 for an example).

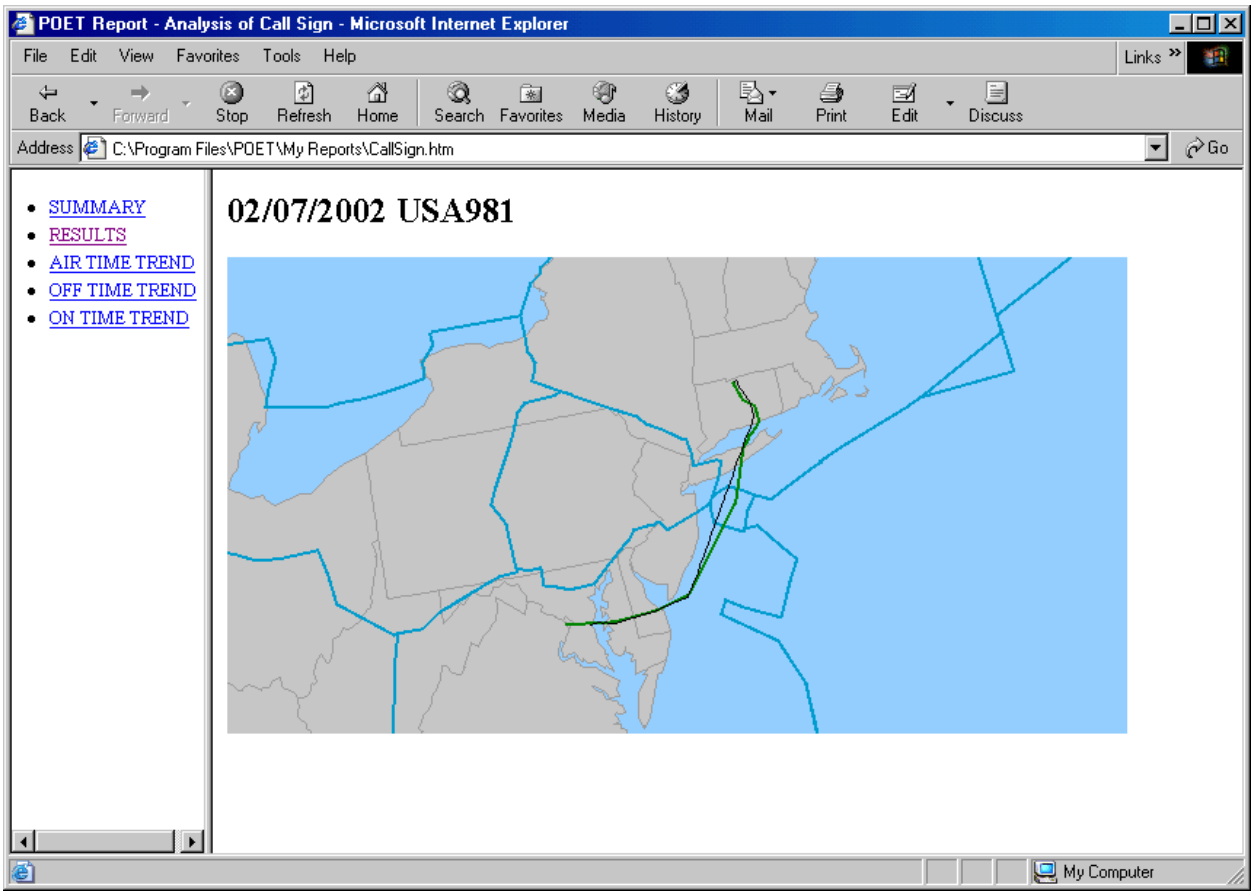


Figure 14: Map Page Pulled from the Summary Report Results Table

Likewise, if you wanted to view a chart summarizing the activity for a single arrival fix, click the arrival fix name in the report. At the bottom of each report page, there are links to go to the **Next** page or **Previous** page in the report.

Start a Summary Report

To begin a Summary Report, click **Summary Reports** on the POET Home menu.

Figure 15: POET Home Page Menu

Once you click the Summary Reports option, the Summary Reports Search Builder Window appears (Figure 16). In the Search Builder window, you can see the different Summary Reports available, as well as the definition and parameters for each report.

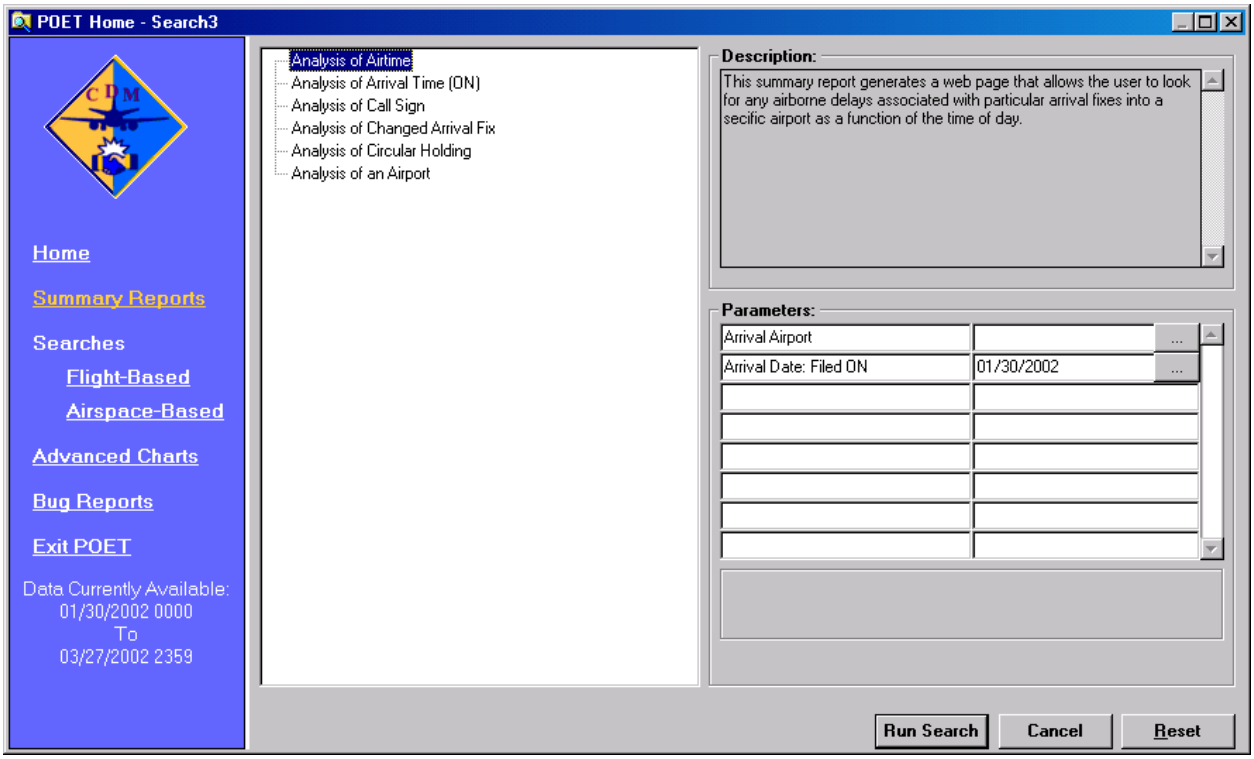


Figure 16: Summary Reports Search Builder

Summary Report Options

There are several Summary Report types available. For example, one popular Summary Report included in POET is **Analysis of a Call Sign**. You can use this Summary Report type to look at all information associated with a call sign on a particular day. Other Summary Reports may aid you in analyzing circular holding, arrival fix compliance, and various NAS-related events.

To select a Summary Report type, simply click the report name in the Search Builder window. The report will be highlighted and the definition and parameters for that report will appear. Please note that available Summary Reports are subject to change in future versions of POET.

Parameters and Shortcuts

Each Summary Report requires you to enter specific parameters in order to run a search and create the report. The following parameters are common to the Summary Reports; however, each report will utilize a different group of the parameters.

Airport Parameters

- **Arrival Airport** - Enter the 3 or 4-character airport codes for the arrival airports you want to analyze. When you enter multiple airport codes, separate each code with a comma. You can enter the codes using your keyboard or by pulling up the pop-up airport menu (Figure 17). Note that some Summary Reports only allow you to enter one arrival airport.

- **Departure Airport** - Enter the 3 or 4-character airport codes for the departure airports you want to analyze. When you enter multiple airport codes, separate each code with a comma. You can enter the codes using your keyboard or by pulling up the pop-up airport menu (Figure 17). Note that some Summary Reports only allow you to enter one departure airport.

SHORTCUT ALERT!

When you enter an airport parameter, POET provides a pop-up airport menu. To access this menu, click the button to the right of any airport field. The button is marked with "…". Once you click the button, a pop-up menu of airports appears. Click the airport code(s) for those airports you wish to include in your Summary Report (see Figure 17). To deselect an airport, click the selected airport again to remove the highlighting.

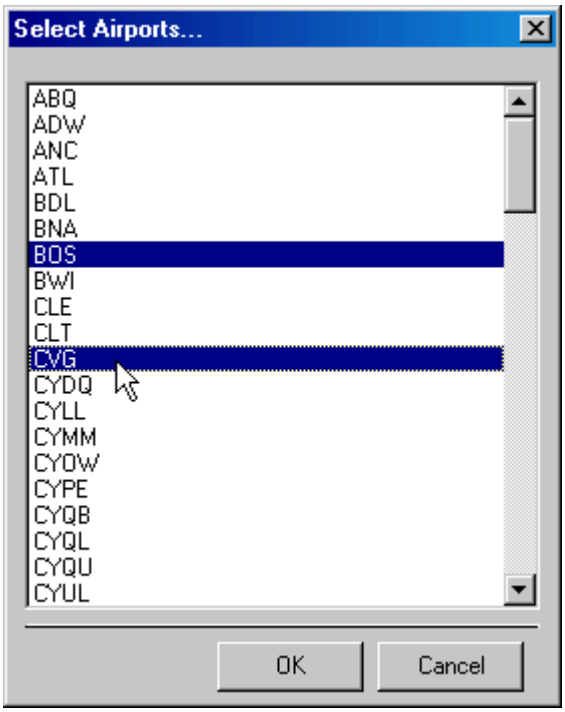


Figure 17: Airport Pop-up Menu with 2 Airports Selected

Date Parameters

- **Start Arrival Date: Filed ON** - Enter the date at which you want POET to begin searching for flights that meet the other parameters you set. POET will include flights in your Summary Report that flew on or after this date up until the date you set in the End Arrival Date field. Note that POET uses Filed ON data.

- **End Arrival Date: Filed ON** - Enter the date at which you want POET to stop its search for flights to include in the Summary Report. POET will include those flights in your Summary Report that flew on or after the Start Arrival Date and on or before the End Arrival Date. Note that POET uses Filed ON data.

- **Start Departure Date: Filed ON** - Enter the date at which you want POET to begin searching for flights that meet the other parameters you set. POET will include flights in your Summary Report that flew departed or after this date up until the date you set in the End Departure Date field. Note that POET uses Filed ON data.

- **End Departure Date: Filed ON** - Enter the date at which you want POET to stop its search for flights to include in the Summary Report. POET will include those flights in your Summary Report that departed on or after the Start Arrival Date and on or before the End Arrival Date. Note that POET uses Filed ON data.

SHORTCUT ALERT!

When you input arrival and/or departure dates, POET provides a pop-up calendar. To access the calendar, click the button to the right of any arrival or departure date fields. The button is marked with "…". Once you click the button, a pop-up calendar appears. By default, the calendar displays the date currently entered in the Date field. You can use the right and left arrow buttons to scroll through the months for which POET contains data. Click a date to enter the date into the current field. An example of the pop-up calendar is shown in Figure 18.

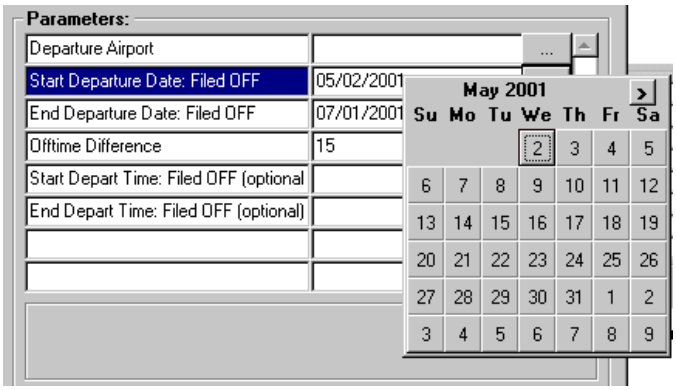


Figure 18: Summary Reports Popup Calendar

Time Parameters

- **Start Arrival Time: Filed ON** *(optional)* - Note that this field is optional. You can generate a Summary Report without using this field. Enter the time at which you want POET to begin its search for flights to include in the Summary Report. POET will include flights in your Summary Report that flew on or after this time up until the End Arrival Time for the date range you specify.

- **End Arrival Time: Filed ON** *(optional)* - Note that this field is optional. You can generate a Summary Report of Analysis of Airtime without using this field. If you choose to use this field, enter the time for each day at which you want POET to stop its search for flights to include in the Summary Report. POET will include only those flights in your Summary Report that flew on or after the time specified in Start Arrival Time and up until the time specified in this field for the date range you set.

- **Start Departure Time: Filed ON** *(optional)* - Note that this field is optional. You can generate a Summary Report without using this field. If you choose to use this field, enter the time for each day at which you want POET to begin its search for flights to include in the Summary Report. POET will include flights in your Summary Report that departed on or after this time up until the End Arrival Time for the date range you specified.

- **End Departure Time: Filed ON** *(optional)* - Note that this field is optional. You can generate an Analysis of Changed Departure Fix without filling in this field. If you choose to use this field, enter the time for each day at which you want POET to stop its search for flights to include in the Summary Report. POET will include only those flights in your Summary Report that departed on or after the time specified in Start Arrival Time and up until the time specified in this field for the date range you set.

- **Time Begin** - You can specify a time range for POET to use when searching for flights. To take advantage of this, enter the start time of the time range in this field using hhmm format.

- **Time End** - You can specify a time range for POET to use when searching for flights. To take advantage of this, enter the end time of the time range in this field using hhmm format.

Other Parameters

- **Call Sign** - Enter the call sign for the flight you wish to analyze. The call sign is made up of the 3-character airline code and the flight identification number.

- **Arrival Center** - Enter the 3-character center code for the arrival center you wish to study or use the pop-up menu described below.

SHORTCUT ALERT!

When you input arrival centers, POET provides a pop-up menu of the available centers. To access the pop-up menu, click the button to the right of the Arrival Center field. The button is marked with "…". Once you click the button, a pop-up menu appears. By default, no centers are selected. You can use the scroll bar to move through the centers for which POET contains data. Click a center to enter the center into the Arrival Center field. The pop-up menu is shown in Figure 19.

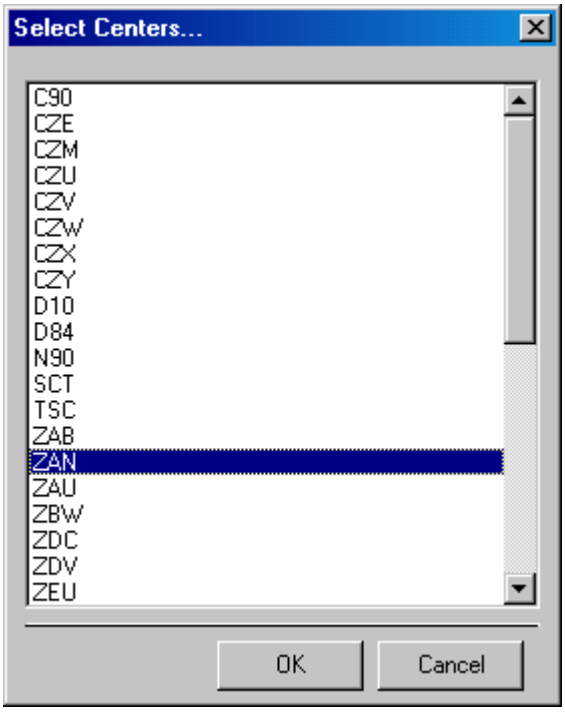


Figure 19: Select Centers

- **Fix** - Enter the name of the fix you wish to study. Note that fix names should be entered using all capitalized letters (i.e. PETTY).

Advanced Charts

Advanced Charts are available from the POET Home window and provide a way to conduct specific analysis without having to run a search. Each Advanced Chart utilizes a pre-defined algorithm, for which you set the parameters. The algorithm results are displayed in a specific type of chart (i.e. line chart, bar chart, etc.).

Start Your Advanced Chart

To create an Advanced Chart, first select Advanced Charts from the POET Home window.

This will take you to the **Advanced Charts Search Builder** window.

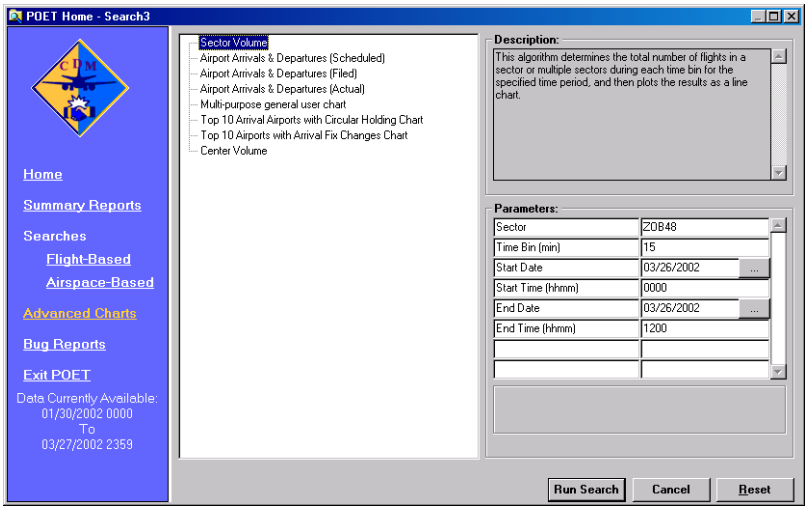


Figure 21: Advanced Charts Search Builder Window

Figure 20: POET Home Page Menu

From the Advanced Charts Search Builder Window, you select the Chart you wish to view and set the parameters for that chart. When you click on a chart type, a description of the algorithm used to generate the chart is provided and the appropriate parameters appear.

Advanced Chart Options

The Advanced Chart options described here are current as of the initial release of POET 2.0. Note that the available options may change with future versions of POET. POET also gives you the option of using an external module plug-in to generate a chart.

Sector Volume

The Sector Volume algorithm determines the maximum number of flights in a sector during each time bin for the specified time period. Results are plotted as a line chart. You must define the following parameters:

- **Sector** - Enter the specific sector(s) you want to analyze. Separate multiple sectors with a comma. The sector(s) should include the 3-character center code and the sector number. For example, ZOB48.

- **Date** - Enter the date you wish to analyze in MM/DD/YY format. Click the button to the right of the Date field to pull up a calendar. From the calendar you can click on a date; this automatically inserts the date from the calendar into the Date field.

- **Start Time (hhmm)** - Enter the time (in Zulu) at which to start your analysis (e.g. 1200).

- **End Time (hhmm)** - Enter the time (in Zulu) at which to end your analysis.

- **Time Bin (min)** - The time bin affects the detail of your chart. For example, if you enter "5," you will see the maximum amount of flights in the sector for every 5-minute time period. Your line chart may vary significantly within each hour (Figure 22). Whereas, if you enter"60," you will see the maximum amount of flights in the sector for every 60-minute time period (Figure 23).

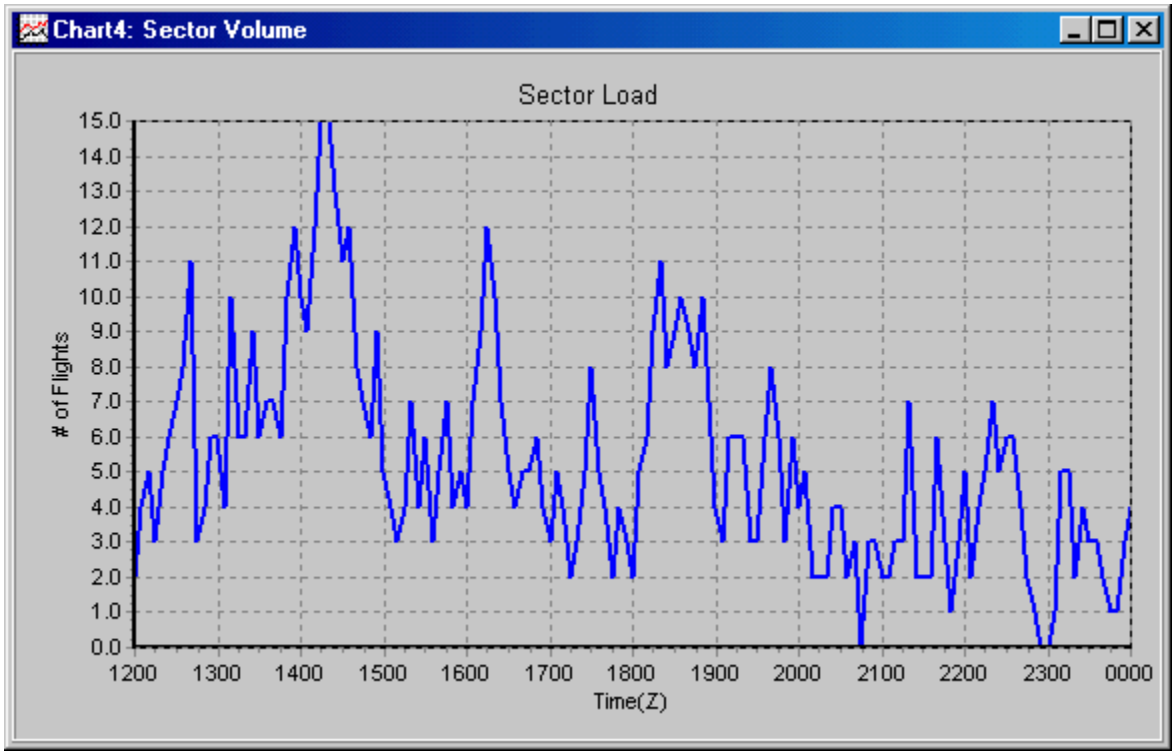


Figure 22: Sector Volume Chart with Time Bin set at 5 Minutes

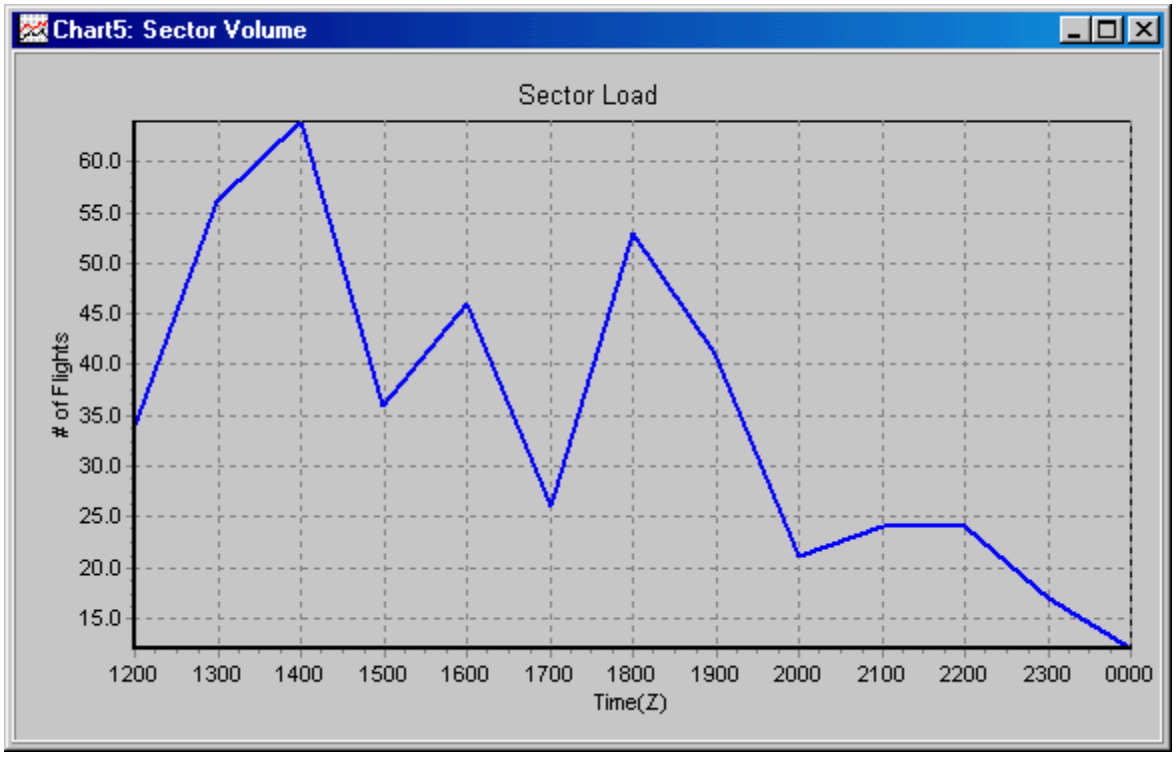


Figure 23: Sector Volume Chart with Time bin set at 60 Minutes

Airport Arrivals and Departures

There are several Airport Arrivals and Departures algorithms available. The algorithms each use different arrival and departure data so that you can generate a chart based on Actual, Filed, or Scheduled data. The algorithms create either a bar or line chart showing the number of departures and arrivals at an airport that actually occurred (based on ETMS data) during each time bin for the specified date and time period. You must define the following parameters:

- **Airport** - Enter the 3 or 4-character airport code for the airport you want to analyze. For a list of airports, click the button to the right of the Airport field. Clicking an airport code in the list will automatically enter that code into the Airport field. Note that you can only enter one airport into the field.

- **Date** - Enter the date you wish to analyze in MM/DD/YY format. Click the button to the right of the Date field to pull up a calendar. From the calendar you can click on a date; this automatically inserts the date from the calendar into the Date field.

- **Start Time (hhmm)** - Enter the time (in Zulu) at which to start your analysis (e.g. 1200).

- **End Time (hhmm)** - Enter the time (in Zulu) at which to end your analysis.

- **Time Bin (min)** - The time bin affects the detail of your chart. For example, if you enter "5," you will see the arrival and departure activity at the airport for every 5-minute time period. The numbers can

vary significantly within each hour. If you enter"60," you will see the arrival and departure activity for every 60-minute time period over several hours.

- **Chart Type** - Use the pull-down menu to select Line or Bar chart, depending on the display you want to see. Figure 24 and Figure 25 show examples of each.

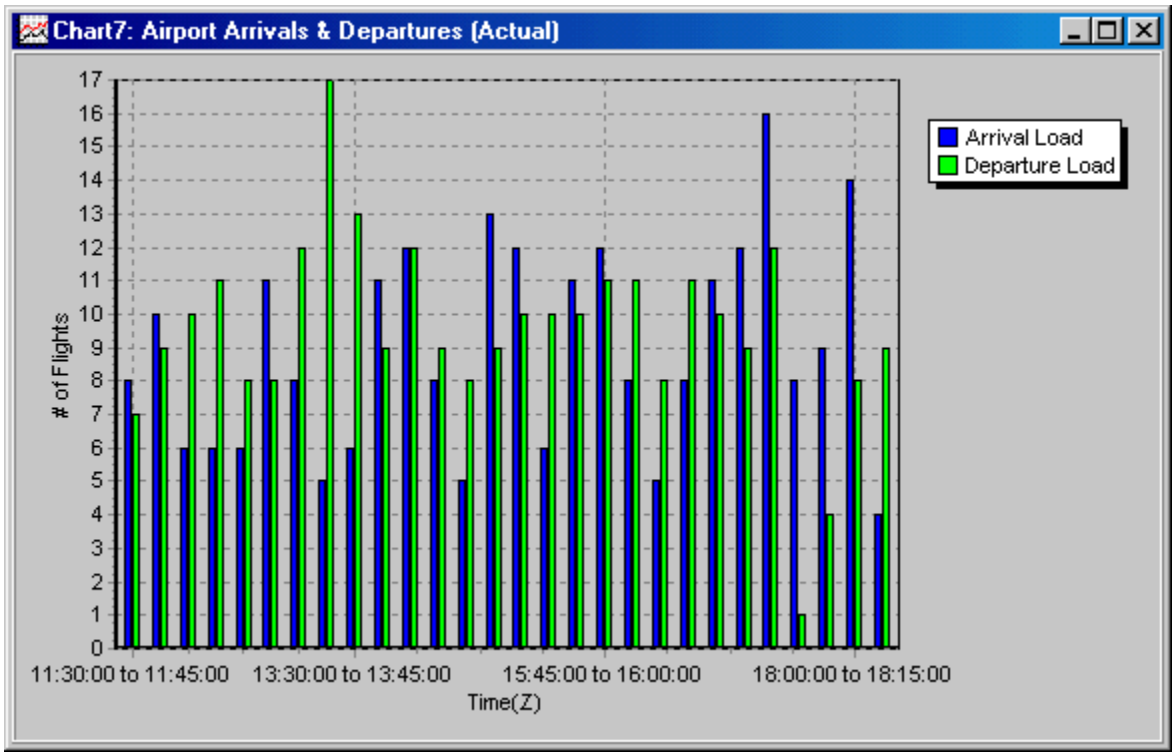


Figure 24: Airport Arrivals and Departures Bar Chart

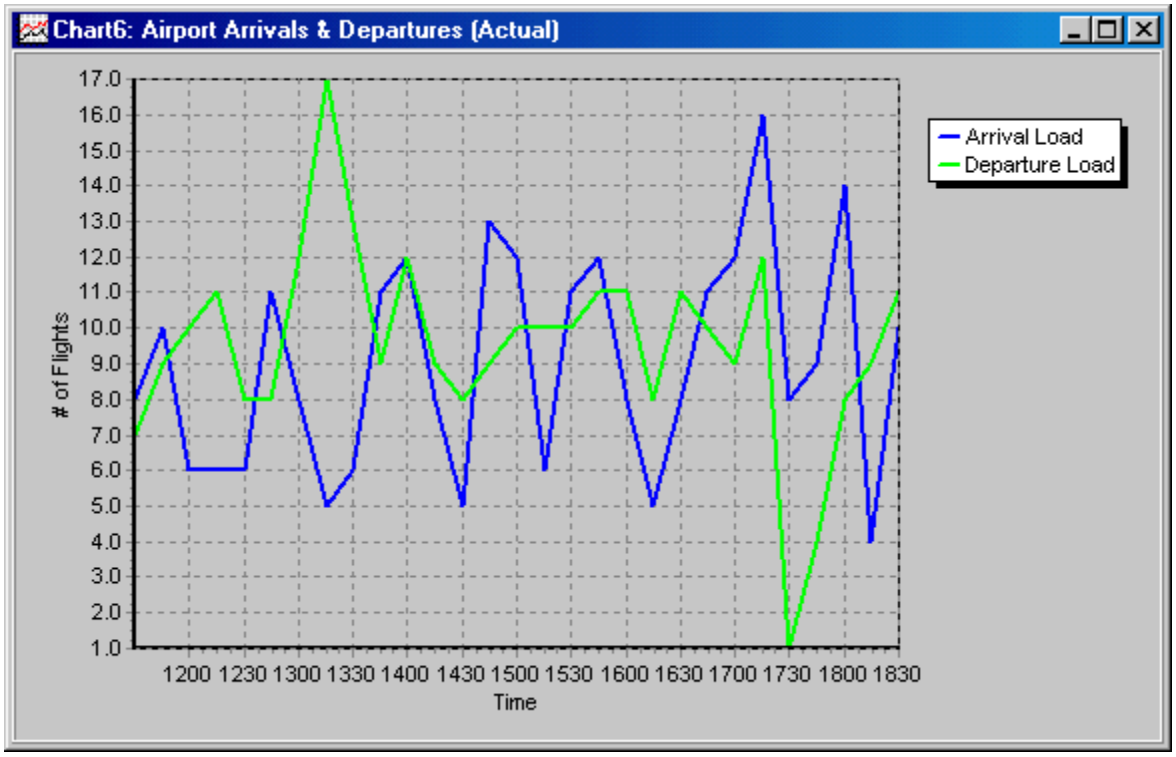


Figure 25: Airport Arrivals and Departures Line Chart

Top 10 Arrival Airports with Circular Holding

This algorithm creates a bar chart showing the top 10 arrival airports with flights that experienced circular holding. You set the date and time range to be analyzed.

- **Start Date** - Enter the date at which POET should begin the analysis
- **Start Time** - Enter the time at which POET should begin the analysis.
- **End Date** - Enter the date at which POET should end the analysis.
- **End Time** - Enter the time at which POET should end the analysis.

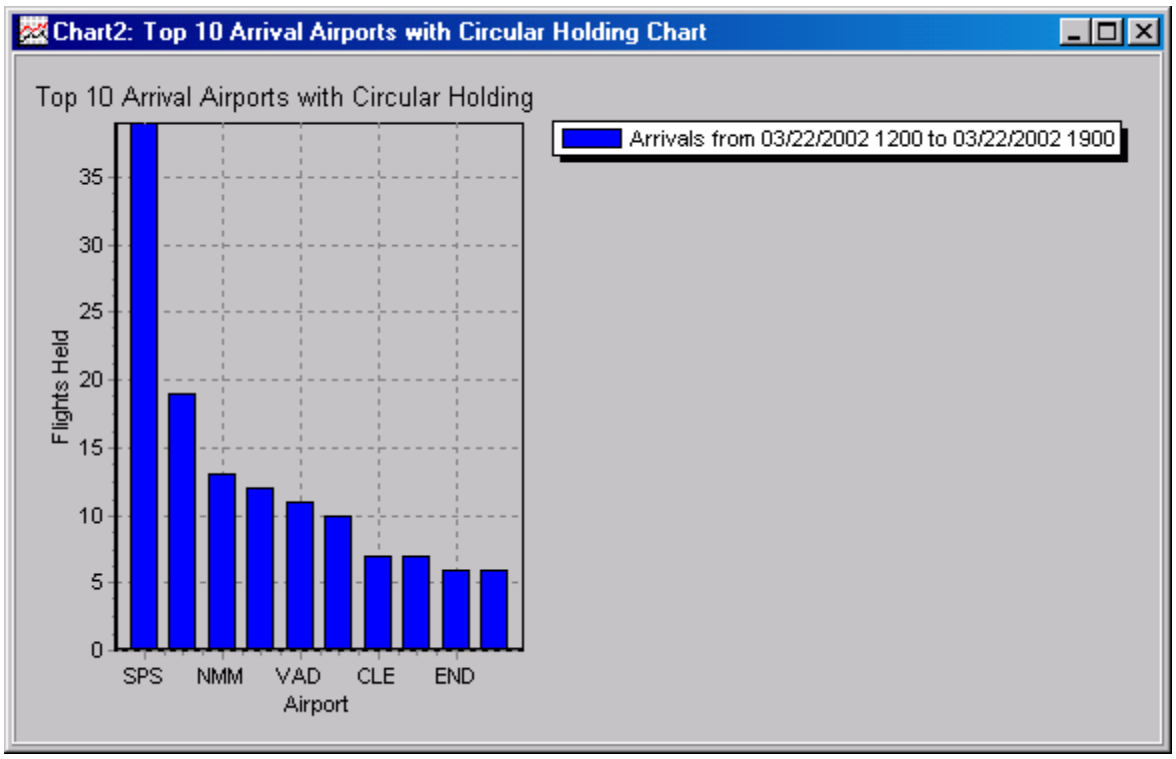


Figure 26: Top 10 Airports with Circular Holding

Top 10 Airports with Arrival Fix Changes

This algorithm creates a bar chart showing the top 10 airports with the most arrival fix changes (planned vs. actual) for flights that arrived between the selected start date and start time and end date and end time.

- **Start Date** - Enter the date on which to begin your analysis
- **Start Time** - Enter the time at which to begin your analysis.
- **End Date** - Enter the date at which to end your analysis.
- **End Time** - Enter the time on which to end your analysis.

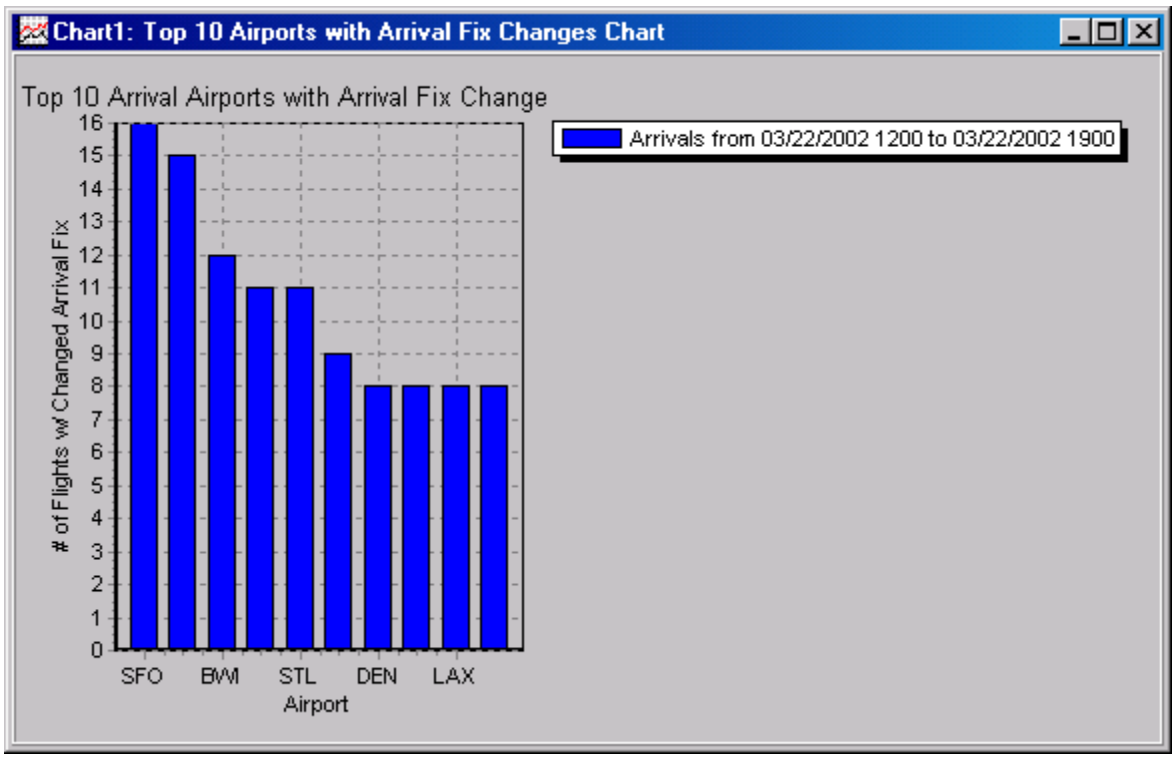


Figure 27: Top 10 Arrival Fix Changes

Center Volume

This algorithm determines the total number of flights in a center or multiple centers during each time bin for the specified time period, and then plots the results as a line chart.

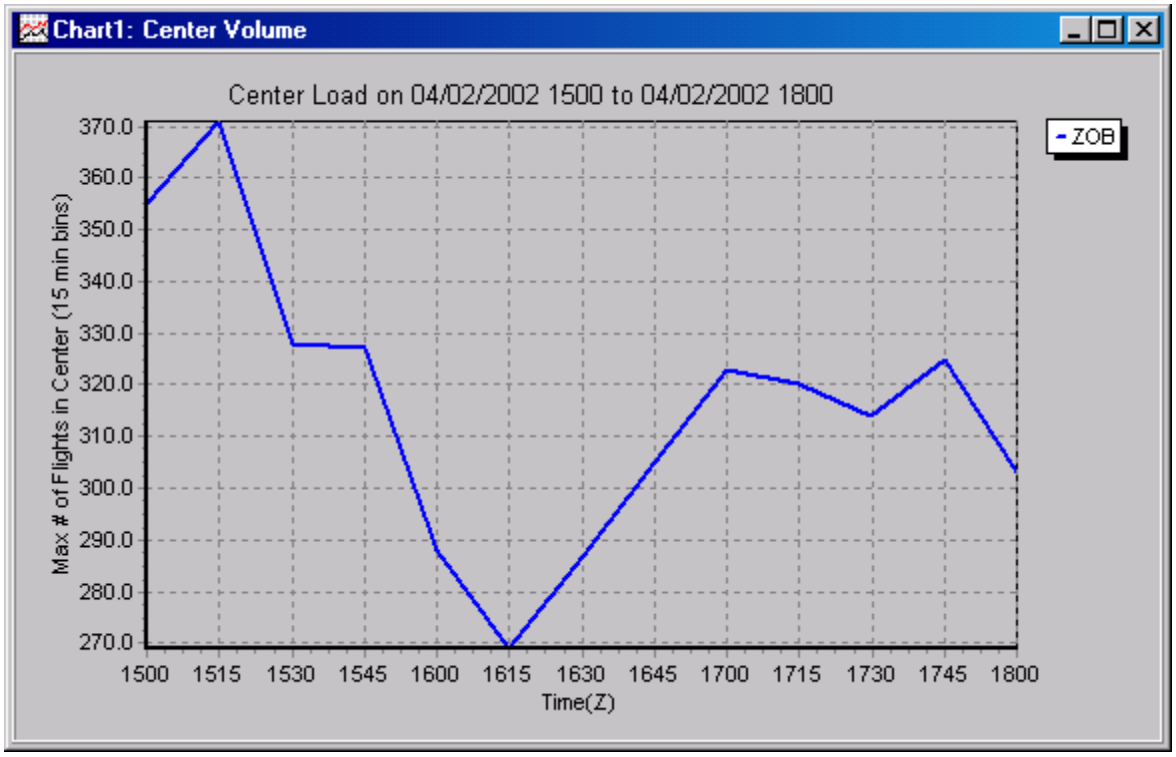


Figure 28: Center Volume

- **Center** - Enter the 3-character code for the U.S. center you want to analyze. Example: ZTL = Atlanta Center.

- **Time Bin (min)** - Poet aggregates your search results into time "bins" that cover a specific range of time. Enter the number of minutes in the Time Bin field to tell POET how many minutes should be included in each "bin." For example, if you enter "15," POET will display the data according to 15-minute time increments.

- **Start Date** - Enter the date at which to begin your analysis

- **Start Time** - Enter the time at which to begin your analysis.

- **End Date** - Enter the date at which to end your analysis.

- **End Time** - Enter the time at which to end your analysis.

Create a Flight-Based Search

In POET there are two types of searches you can conduct. A **Flight-Based Search** is useful for finding information about different flight groups into or out of specific airports. For example, if you wanted to find flight groups departing from DTW and arriving at ATL that met certain criteria, you would perform a flight-based search.

This chapter specifically discusses performing a New Flight-Based Search. For information on opening a previously saved search or using search templates, see the chapter titled "Run and Save Your Report, Search or Chart" on page 55.

Start Your Search

From the POET Home, click **Flight-Based** under **Searches**.

Figure 29: POET Home Page Menu

Define Search Parameters

The first step to create a new Flight-Based search in POET is to define your search. That is, you must enter specific search criteria, or *parameters*. You can fill in as many or as few parameters as you wish to

conduct your search. Note that the more general your search is, the longer POET may take to load your search results.

You enter your search parameters in POET's Flight-Based Searches **Search Builder Window**, which appears once you click Flight-Based on the POET Home menu.

The Search Builder Window for Flight-Based Searches contains three tabs, each with a different set of search fields and flight grouping criteria for you to use. You can use as many or as few of the tabs and fields as you wish to define your search and group your flights. You define your flight search using the Selection Criteria tab. Using the other tabs, you define additional criteria to use in grouping the search results.

The three tabs available on the Search Builder Window are:

1. **Selection Criteria** - This tab provides the actual flight search fields. For example, you can enter origin and destination airport, date range, and airline parameters in this tab to define the collection of flights for which you are searching. Additional selection criteria allow you to select data ranges for your search results. For example, you can tell POET to search for flights within a particular range of airtimes.

2. **Flight Groupings** - This tab allows you to determine whether you wish to group flights in your search results according to specific criteria. For example, if you want to view your search results grouped by aircraft type, you would select that parameter in the Flight Groupings Tab.

3. **Data Quality** - This tab allows you to determine which flight information will be displayed in your results based on the quality of data associated with the flight. Flights not meeting the data quality requirements will be returned in your search results but will be deleted/grayed. These flights are not included when calculating a flight group's performance metrics statistics.

The Selection Criteria Tab

The Selection Criteria Tab contains the actual search fields for your search. This is your starting point for entering search parameters as it determines the collection of flights that will be included in the search results.

If you do not select any parameters in the Selection Criteria tab and choose to run a search, your search will use the default parameters in the Selection Criteria tab. This generally includes the full date range of flight information for all airlines and airports and can take a long time to run.

Search Logic in the Selection Criteria Tab

Within each search field, you can select or enter several search *parameters*. If you enter more than one parameter in a search field, POET searches for flights that meet any of those parameters. Entering multiple parameters in a single field tells POET to search for flights that meet one parameter *or* another. For example, if you select ATL, DCA, and EWR as departure airports, POET searches for flights that departed from ATL *or* DCA *or* EWR.

When you enter parameters in multiple *fields*, POET searches for flights that meet parameters in *all* the fields. Entering parameters in multiple fields tells POET to search for flights that meet the criteria entered in one field *and* another. For example, if you select ATL as a departure airport and DFW and DCA as arrival airports, POET searches for flights that departed from ATL *and* arrived at DFW or DCA.

This search logic is important because it can adversely affect your search. Note that some search fields are less constrained than others. For example, a single center is a broader search field than a single airport. If you enter parameters in both the Filed Center search field and the Arrival or Departure Airport search field, POET will conduct its search according to the more constrained search field. For example, if you enter ATL as the parameter in the Departure Airport search field and ZTL in the Filed Departure Center search field, POET will search for flights that have ZTL as the Filed Departure Center *and* ATL as the Departure Airport. Your search results will only yield flights with ATL as their departure airport. Flights departing from any other airport within ZTL cannot be included in the results because they do not meet the parameters in *both* search fields.

If you are not careful when entering parameters in all the search fields, you could effectively eliminate any flights from your results. For example, if you enter ATL as the parameter in the Departure Airport search field and ZNY in the Filed Departure Center search field, POET will not return any flights because it is impossible for any flights to depart both ATL and ZNY.

Working Example

In this chapter, we will use a single search example to explain Flight-Based Searches.

An Example: Find all flights departing from LAX or ATL and arriving at DFW for a single day whose planned versus actual airtimes differ by more than 5 minutes. The date that you use may differ from the date used in this guide. We will sort the results according to Actual Arrival Date, Actual and Planned Arrival Times, and Actual Arrival Fix.

In Figure 30, we have entered search parameters in the Selection Criteria Tab according to our example search. We selected LAX and ATL as departure airports, DFW as the arrival airport, and defined the date range as Actual Arrivals for a single day.

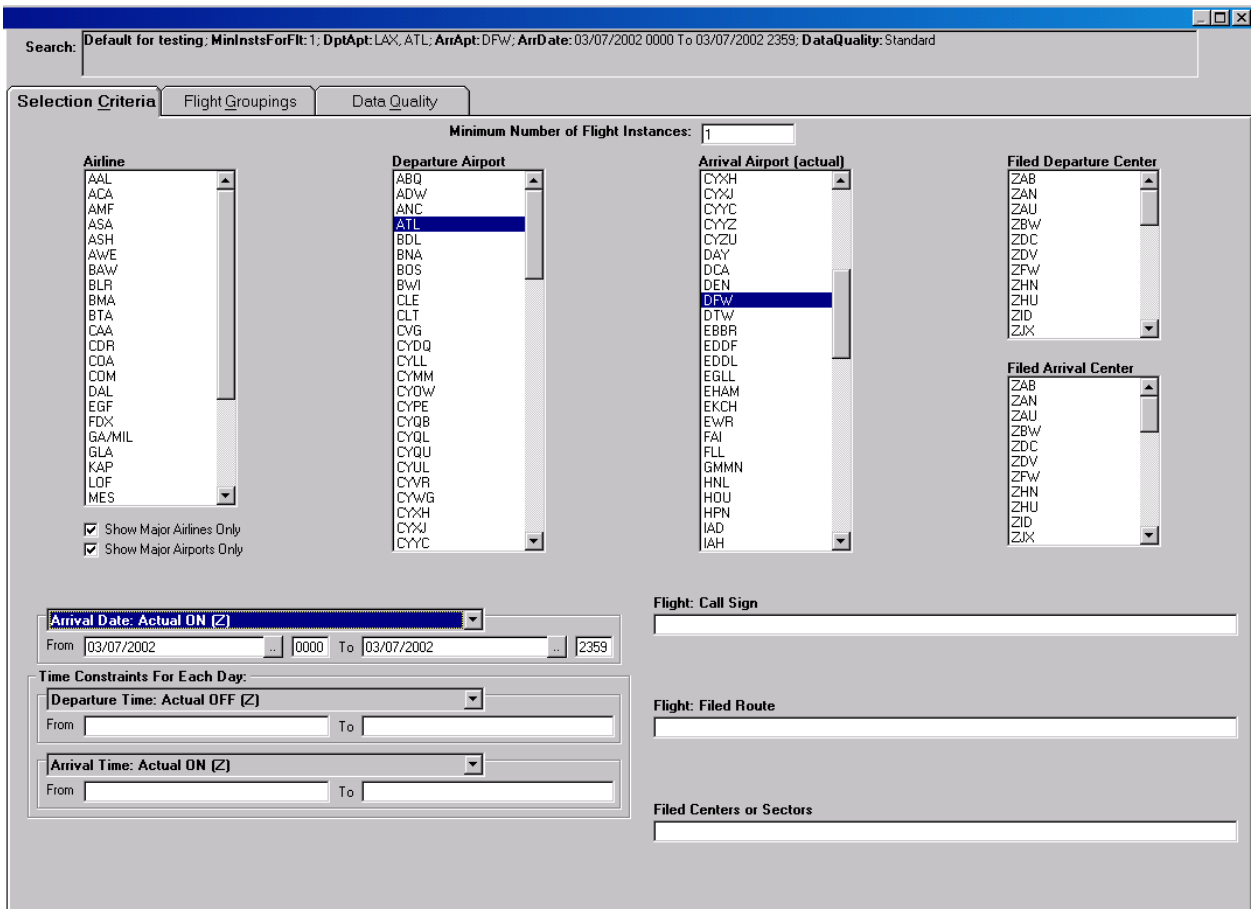


Figure 30: Selection Criteria Tab

Selection Criteria Search Fields

Minimum Number of Flight Instances

This value is the minimum number of flights necessary to be included as a 'flight group.' Only those flight groups with the minimum number of flights will be returned in the search results. This prevents a display of flights groups that contain very few flights.

Figure 31: Flight Instances Field in the Search Criteria Tab

An Example: In our POET example, we will keep the default value for the minimum number of flight instances at '1.' This should provide flight results for the entire day. Note that you could change this value to greater than '1' to limit the flight results returned.

Airline

The Airline search field lists the airlines that are available for your search. Select an airline by clicking on the airline code. Click several codes to select multiple airlines. To deselect an airline, click on the highlighted airline code.

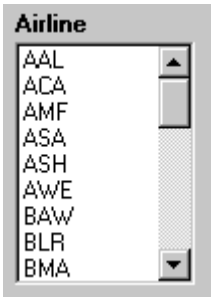


Figure 32: Airline Field in the Search Criteria Tab

An Example: In our example, we want all airlines included in our search. By not selecting any airline in the airline field on the Search Criteria Tab, POET will include all airlines in the search results by default.

Show Major Airlines / Airports Only

Clicking on these boxes will allow you to either view all of the airlines/airports (separate check boxes for each) or just the major airlines/airports. **Note:** checking these boxes will not adjust the search query, but will only change what you see in the Search Builder Window's Airline and Airport search fields.

Figure 33: Show Major Airlines/Airports Field in the Search Criteria Tab

An Example: The default value in POET for these two fields is to check them as "on." We have left the boxes checked. However, because major airlines and airports will always appear in POET's search fields, we could uncheck this option and still view the airlines/airports we want in our search. If we were to search flights from an airport or airline that is not considered "major," we would uncheck these boxes.

Departure Airport

This field specifies the departure airport (s) to be included in the search. Select one by clicking once on the airport code. Click several to select multiple airports. To deselect an airport, click on the highlighted airport code.

An Example: For our search, we are looking at flights that departed from ATL and LAX airports. We selected ATL and LAX in the Departure Airports field in the Search Criteria Tab (Figure 34).

Figure 34: Select Departure Airports in the Search Criteria Tab

Arrival Airport

This field specifies the actual arrival airport (s) to be included in the search. Select one by clicking once on the airport code. To deselect an airport, click on the highlighted airport code. Click several to select multiple airports.

An Example: For our search, we are looking at flights that arrived at DFW airport. We selected DFW in the Arrival Airports field in the Search Criteria Tab (Figure 35).

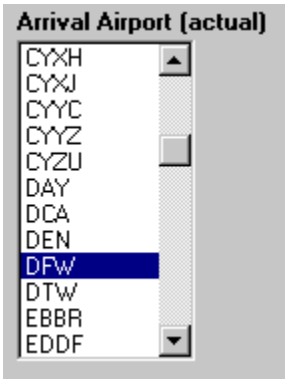


Figure 35: Arrival Airports Field in the Search Criteria Tab

Filed Departure Center

This field specifies the departure center (s) to be included in your search. Select one by clicking once on the center code. To deselect a center, click on the highlighted center code. Click several to select multiple centers.

An Example: The filed departure center is irrelevant to our particular search. Not selecting a specific departure center means that POET will not constrain its search according to this field.

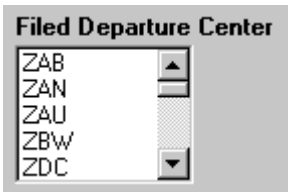


Figure 36: Filed Departure Centers Field in the Search Criteria Tab

Filed Arrival Center

This field specifies the arrival center (s) to be included in your search. Select one by clicking once on the center code. Follow the same procedure to select multiple centers. To deselect a center, click on the highlighted center code.

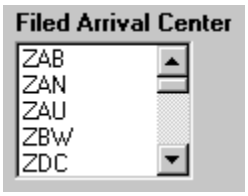


Figure 37: Filed Arrival Centers Field in the Search Criteria Tab

An Example: The filed arrival center is irrelevant to our particular search. By not selecting a specific arrival center, POET will not constrain its search according to this parameter.

Scheduled, Filed, and Actual Departure and Arrival Dates

Specify the departure and/or arrival date(s) and times for the flights to be included in your search using the 3 fields at the bottom left of the Search Builder Window. Note that as well as telling you whether the departure/arrival date is Scheduled, Filed, or Actual, POET also lets you know if the departure/arrival data is based on OFF, ON, IN, or OUT times. You have the option of simultaneously analyzing Actual and Filed data. Note that all times are Zulu (Z).

Click the pull-down menu to specify a search parameter (e.g. Departure Date: Filed OFF). Then enter a date range that includes beginning (From) and end (To) dates for the parameter you selected. Click the button to the right of either the **From** or **To** field to pull down a calendar. In the calendar you can click the arrows at the top to scroll through months. Click a date on the calendar or type the date directly into the correct field to fill in your date range.

To specify a time range, enter the time (GMT) using the 24-hour clock times. The default time range is from 0000 to 2359, which covers an entire day.

An Example: In the Arrival/Departure Date field, we clicked to pull down the menu of arrival and departure dates available for our search (Figure 38). We clicked Arrival Date: Actual ON to choose that as the date for our search. The next step is to pick out a date range for flight arrivals. If you are unsure of the dates you wish to search for, you can pull up a calendar in the date (Figure 39 and Figure 40). We entered a single date in both the From and To fields and left the default time options so that our data is pulled from a single day.

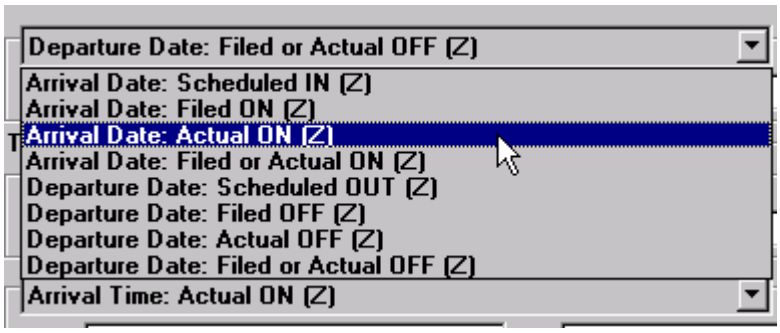


Figure 38: Arrival Date Field in the Search Criteria Tab

Figure 39: Click Here to Pull Up a Calendar

Figure 40: Calendar Available in the Date Range Field

Filed Route

In this field you can defines a comma-separated list of route segments that must be contained in the filed route.

Examples: TXO = TXO included in route
TXO.UKW3 = TXO.UKW3 included in route
JEN, UKW3 = Either JEN or UKW3 included in route

An Example: We are not using a specific Filed Route in our search. Therefore, we did not enter any parameters into this field.

Figure 41: Filed Route Field in the Search Criteria Tab

Call Sign

This field identifies the call sign of the specific flight for which you are searching (e.g. DAL2276).

An Example: We are searching for a group of flights as opposed to those flights whose call sign we know. Therefore, we left this field blank in the Search Criteria tab.

Figure 42: Call Sign Field in the Search Criteria Tab

Filed Centers or Sectors

This field identifies the centers and/or sectors through which a flight plan is projected to pass. Listing a filed center and/or sector as a search parameter will limit the search to only flights that were filed to pass through that center and/or sector. For example, to limit your search to only flights that passed through the New York Centor, enter ZNY. Likewise to limit your search to flights that passed through the New York Center sector 23, enter ZNY23.

An Example: In our example search, we do not specify Filed Centers or Sectors.

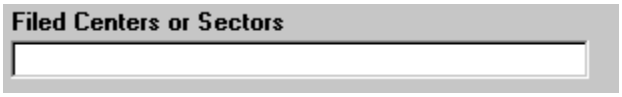


Figure 43: Filed Centers or Sectors Field

Additional Selection Criteria

When you click the Additional Selection Criteria button, a window opens. In this window, you can further limit your search to specific data ranges. For example, if you are searching for just NRP flights or only those flights with a particular Filed ON Time, you would enter those constraints here. Additional Selection Criteria are made up of an **Expression**, an **Operator**, and a **Value**. You can use additional selection criteria in conjunction with each other using the **And/Or** pull-down menu to the left of the Expression column. The descriptions below should help you fill out your additional selection criteria.

1. **Expression**: The Expression is the actual data element for which you wish to define a range. For example, to look for flights that had a particular actual en route time, you would select Actual Air Time as your expression and then create a range for that data element.

2. **Operator**: The Operator allows you to determine the parameters for the selected Expression (e.g., Filed Air Time). The following operators may be available depending on the selected expression:

<none>
> (Greater than)
>= (Greater than or equal to)
= (Equal to)
<= (Less than or equal to)
< (Less than)
<> (Either less than or greater than)
Between: When "Between" is selected, a box labeled "And" will appear to the right of the Operator. This will allow you to input the range.
Contains: Enter a value that must be in the expression for the flight to be included in your results. For example, enter PETTY if you are looking for flights whose filed fix list contains the fix PETTY.

3. **Value(s)**: This field defines the alphanumeric value of the selected performance metric.

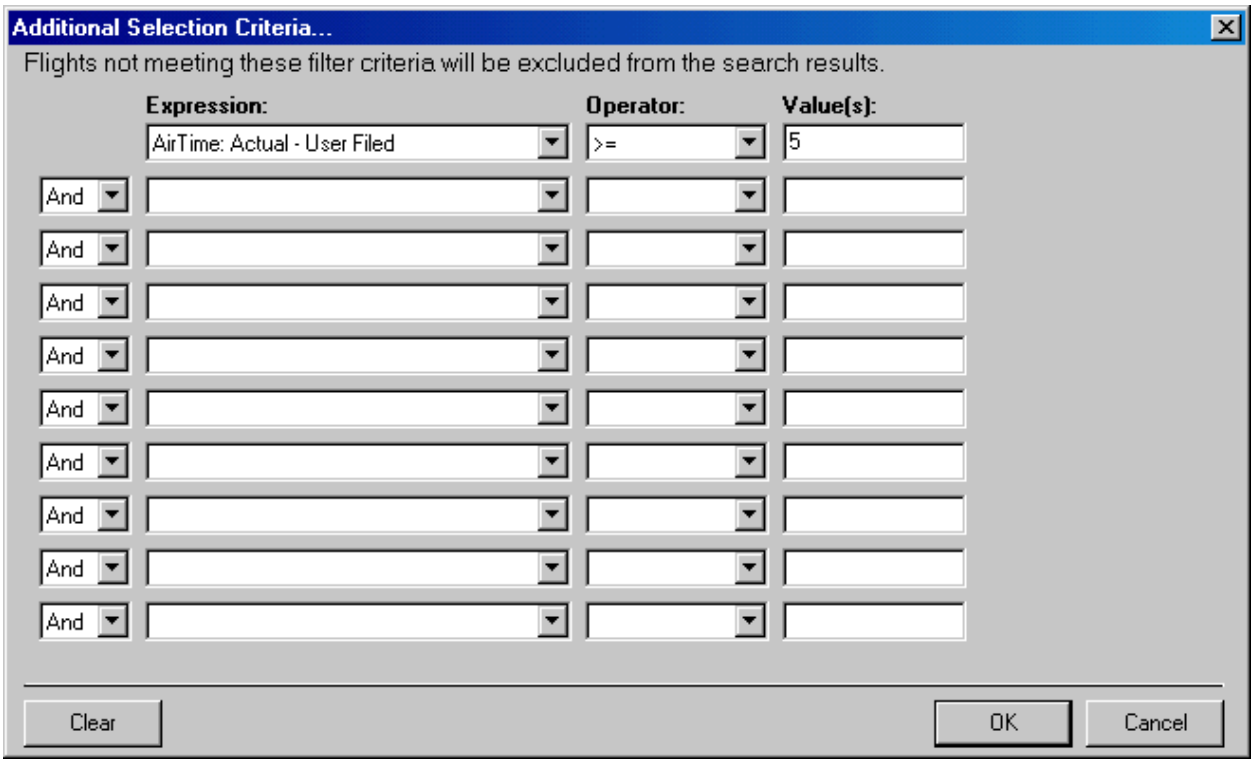


Figure 44: Additional Selection Criteria

An Example: In our example we are looking for flights whose Actual and Filed air times have a difference of 5 minutes or greater. In the Additional Selection Criteria window, we used the pull-down menus to select Airtime: Actual-User Filed and the operator for "greater than or equal to." In the Value field, we typed "5." This means that our search results will return only those flights whose Actual-User Filed Airtime has a value greater than or equal to 5 minutes.

Keyboard Shortcuts for the Selection Criteria Tab

When entering your search parameters, keep in mind the following keyboard shortcuts. They will help you move through the search fields easily.

- **Tab key** - Use the tab key on your keyboard to move from one search field to another.

- **Typing** - In the Airline and Airport search fields, you can type the letters of the 3-letter code for a particular airline or airport. This will move the cursor to the selection that matches your typing. To use this feature, you must type the airport letters quickly (e.g., ATL). Otherwise, the code highlighted will jump from those codes that match the first letter you type to those codes that match the second letter you type and so on. **Note** that once the option you entered is enclosed by a square, you must select it by clicking on it or pressing the *spacebar* on your keyboard. **Do NOT press the Enter key unless you are ready to Run your search.**

Flight Groupings Tab

The parameters set in the Flight Groupings Tab determine how POET groups the flights in your search results. You can select both top-level flight groupings and additional sub-groupings for your flights. Note that in general we do not recommend you use sub-groupings until you have run your search results.

Top-Level Flight Groupings

There are two fields in the Flight Groupings Tab: **Available** and **Selected** (see Figure 45). The Available field lists all of the Flight Grouping options that you can apply to your results. The Selected field lists all of the Flight Grouping options that you have actually chosen for grouping your search results.

You can move any flight grouping option (such as Filed Route) from one field to the other in one of two ways:

1. Click the option and click either the right or left arrow button in the middle of the window

2. Double-click the option. The option automatically moves to the other field.

Flights are grouped in your search results in the order you set in the Selected field. To change the ordering of the flight groups, use the up/down arrows to the right of the Selected field (see Figure 45). Click on an option in the Selected field. Then click the up or down arrow to move the option above or below the other options in the Selected field.

Flight Grouping Hierarchy

For user ease, the flight grouping options are bundled into related groups under a main heading. For example, any grouping option directly related to the flight arrival time is under the heading "Arrival Time." This would include information such as the Scheduled IN, Filed ON, and Actual ON times for the flight. To expand the headings and view the grouping options available under that heading, either double-click the heading itself or click the plus symbol (+) next to the heading. To hide the options under each heading, either double-click the heading itself or click the minus symbol (-) next to the heading.

An Example: In our example search, we will group our search results according to Actual Arrival Date, Actual and Filed Arrival Times, and Actual Arrival Fix. Therefore, we first need to remove the default groupings. In Figure 46, we have selected Airport: Departure (actual) to remove. Note that the cursor is on the arrow to move the grouping to the Available field, which will delete it from the Selected field. We will do the same thing with Airport: Arrival (actual).

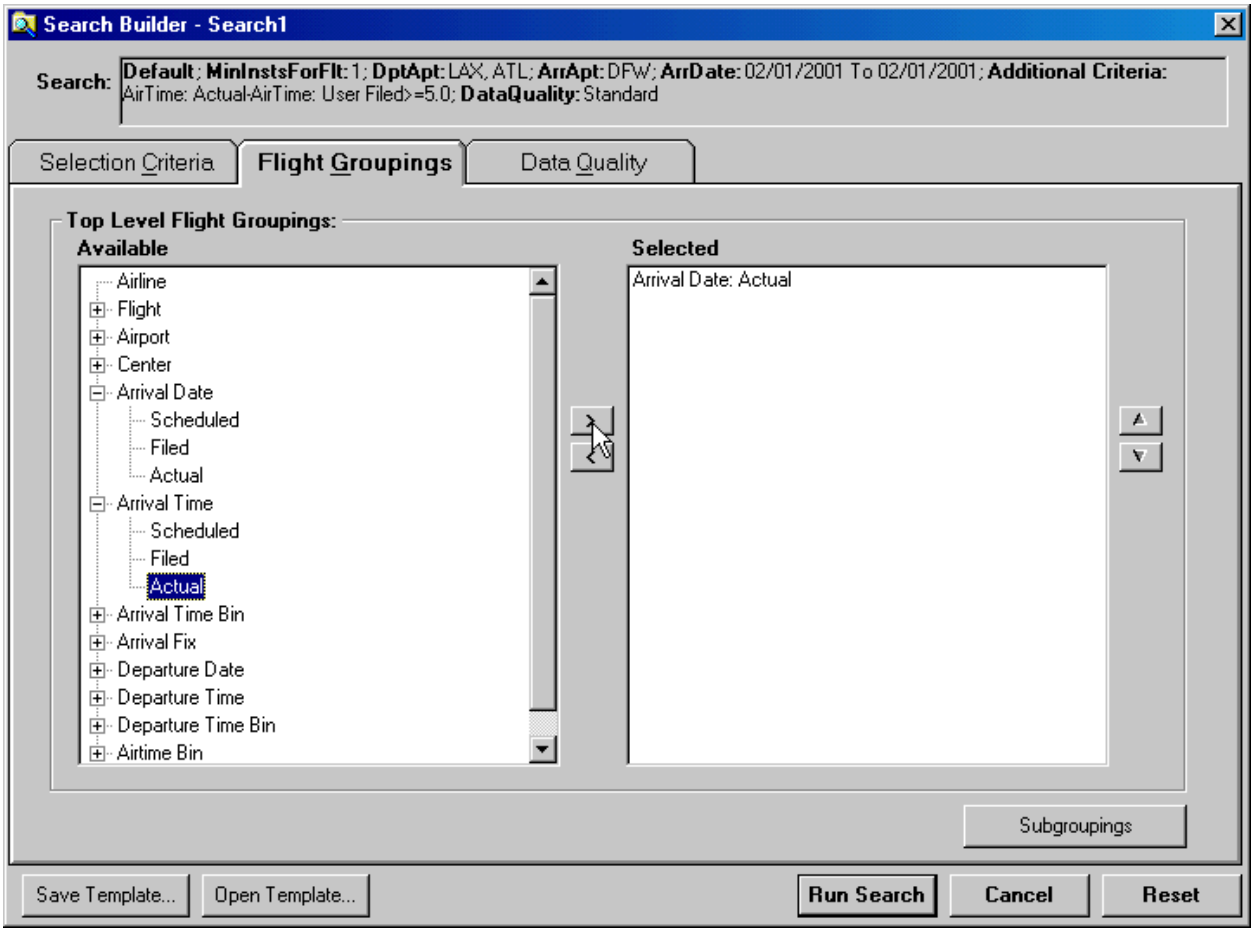


Figure 45: Adding Flight Groupings

An Example: Once we remove the necessary groupings from the Selected field, we must choose groupings from the Available field to use in grouping our search results. In Figure 45 we have already placed Arrival Date: Actual into the Selected Field and are in the process of adding Arrival Time Actual. Note that the cursor is on the arrow to move Arrival Time: Actual to the Selected Field.

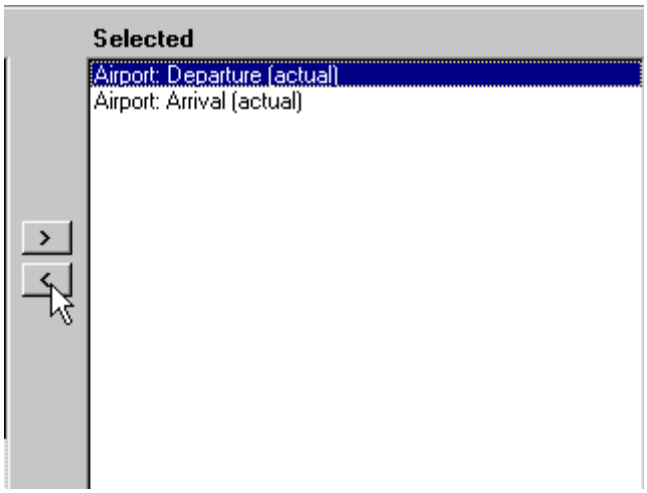


Figure 46: Remove Flight Groupings

An Example: For our example, our final Flight Groupings in the Selected field will look like Figure 47.

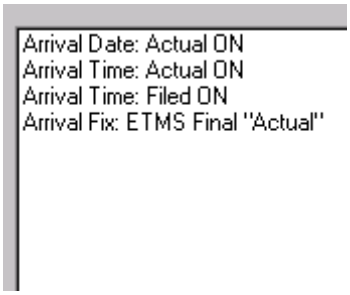


Figure 47: Selected Groupings for the Working Example

Sub-groupings

Whereas Top-Level Flight Groupings determine the primary flight groups, Subgroupings are used to further divide the top level groups and find patterns or inconsistencies in the data. To subgroup your flights, you can click the **Subgroupings** button at the bottom of the Flight Groupings Tab. Sub-grouping flights as part of your search criteria will apply the sub-grouping criteria to *each* top-level flight group in your search results and may result in a substantially longer search time. Additionally, your analysis most likely will not require that each flight group be sub-grouped according to the same criteria, if at all.

POET also gives you the option of applying sub-groupings *after* you complete your search. If you wait to apply sub-groupings until you view your search results, you can choose to apply the sub-groupings to specific flight groups. We recommend applying sub-groupings after you complete your search, as this is often the most efficient analysis tactic.

This section describes accessing sub-grouping criteria from the Flight Groupings Tab. For information on the specific sub-grouping options, see Data Mining on page 78.

Apply Subgroupings as Part of Your Search Criteria

On the Flight Groupings Tab, click the **Subgroupings** button. This opens the **Subgroupings** window. This window works much like the Flight Grouping Tab.

There are four fields in the Subgroupings window (Figure 48). **Available** and **Selected** show which subgrouping options are *available* for you to use and which options you have actually *selected* to use in your search. The **Description** field describes the subgrouping option you have selected (highlighted) in the Subgroupings window. The **Parameters** field allows you to change any parameters that may be associated with the subgrouping option you choose. The parameters vary with each subgrouping option and in some cases are not available at all. If you can change the parameters for a particular subgrouping option, the parameters and their current values will appear in the text boxes in the Parameters field.

Only those sub-groupings in the Selected field will be applied to your search results. You can move a sub-grouping option between the Available and Selected fields in two ways:

1. Click on the option you wish to move. That option should be highlighted. Once the option is highlighted, click the right or left arrow button (> or <) to move the option to the Available or Selected field.

2. Double-click the option. If the option was Available, it should now be Selected and vice versa.

Note that those options with a plus symbol (+) expand to display additional options. For example, if you want to subgroup your results by Circular Holding, you need to expand the options under the heading "Flight." Either double-click the Flight heading or click the plus symbol (+) next to Flight to view the sub-grouping options under that heading.

Flights are sub-grouped in your search results in the order you set in the Selected field. To change the order of the sub-groupings, click on an option in the Selected field. Then click the up or down arrow to the right of the Selected field to move the option above or below the other options. The arrows are only activated when you have selected an option to move.

In Figure 48, **Circular Holding** and **Changed Arrival Fix** are selected as options by which to sub-group the top-level flight groups in the search results. In the Available field, Changed Arrival Fix is still highlighted. You can see the description of this sub-grouping option and also see that there are no parameters to set for this particular option.

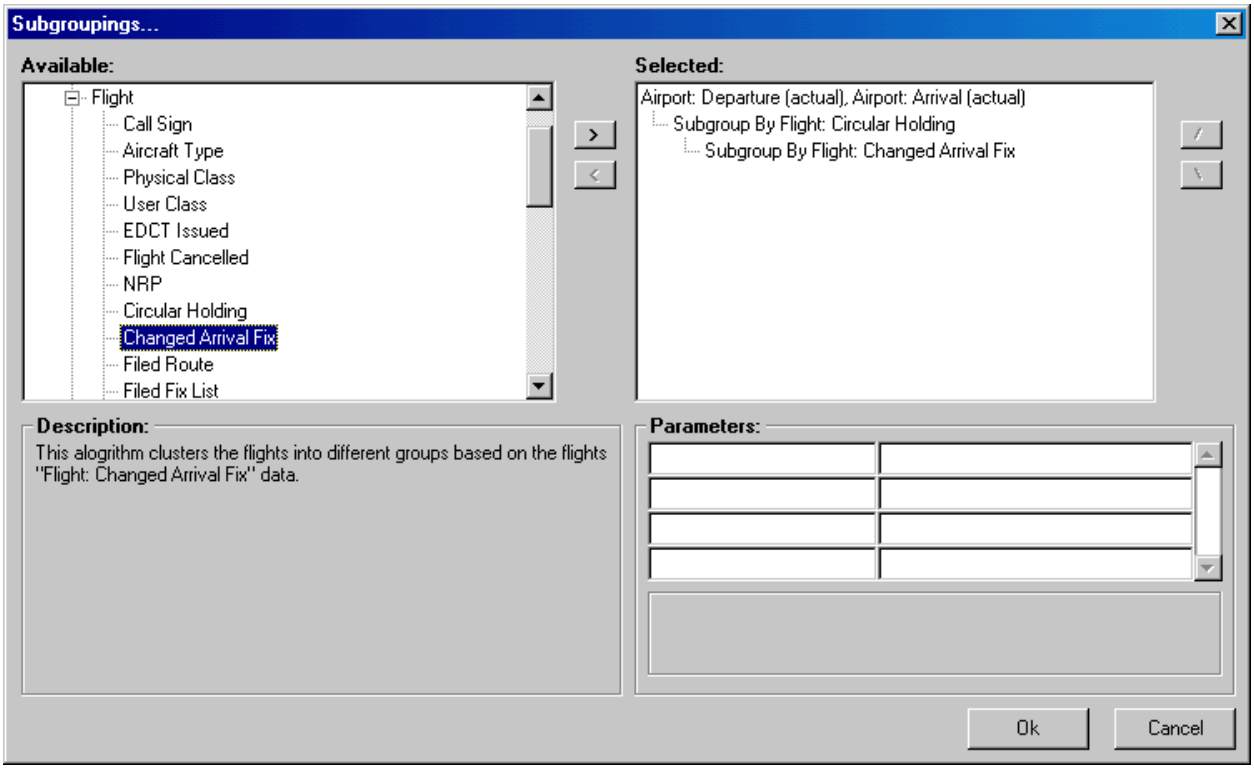


Figure 48: Subgroupings Window With 2 Subgroupings Applied

An Example: We will not use sub-groupings as search criteria. DO NOT apply any subgroupings if you are following the Example.

Data Quality Tab

Data quality settings filter your search to remove flights that have missing or invalid data. If a flight's data does not meet the data quality setting you specify, it will not be included in your results. You can select an existing POET data quality setting or create a custom data quality setting of your own. The default data quality setting will be the setting you used in your most recent search.

An Example: In our example, we will exclude flights whose planned and actual airtime differs by more than 120 minutes. (actual airtime - planned airtime = >120).

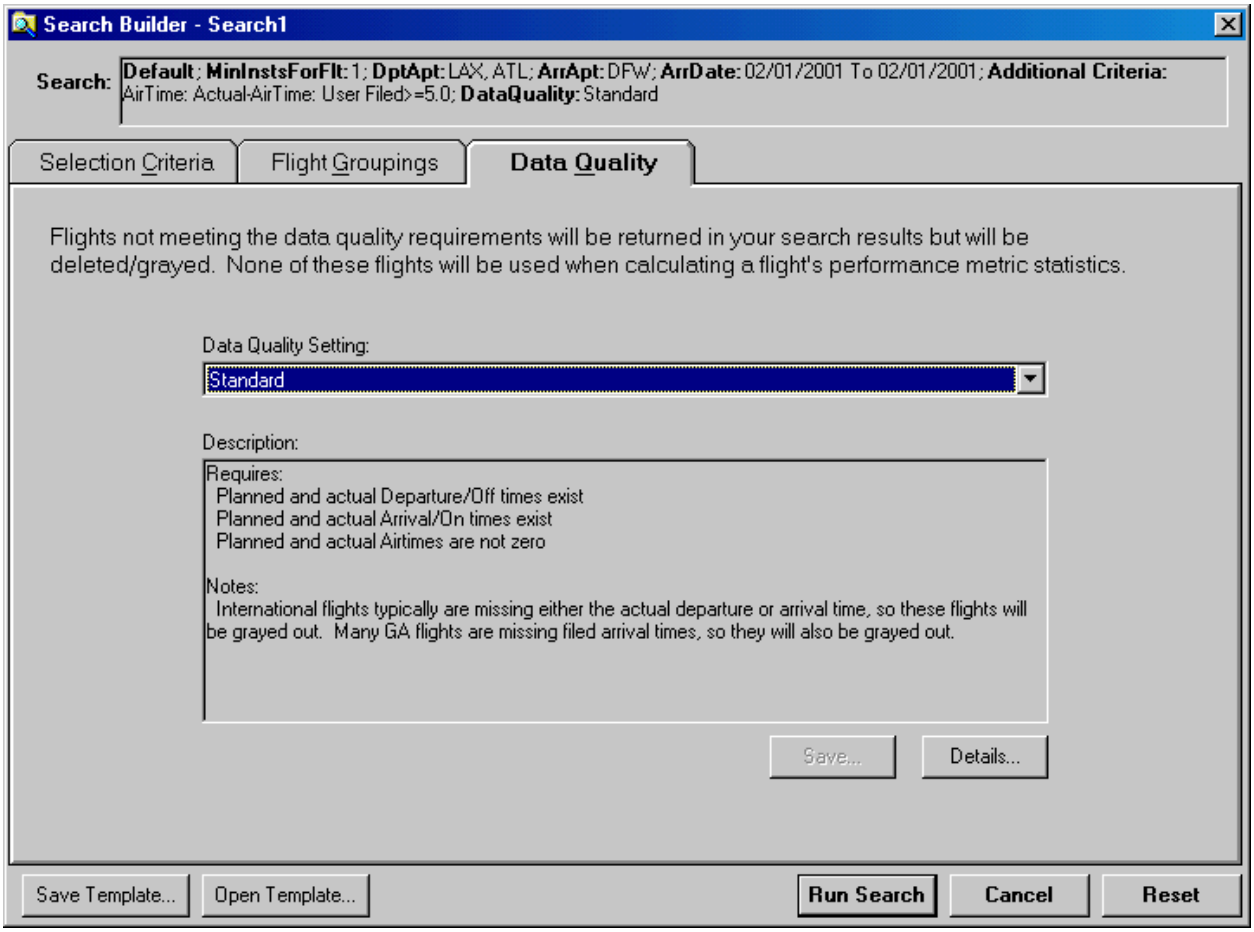


Figure 49: Data Quality Tab

The pre-programmed settings are:

- **Standard** - Requirements for this setting: (1) planned and actual departure times exist; (2) planned and actual arrival times exist; (3) planned and actual airtimes are not zero. Note that international flights typically are missing either the actual arrival or departure time and will be grayed out in your results display.

- **Arrivals Only** - This setting requires that planned and actual arrival times exist. Typically this setting is useful for searches that focus on arrival statistics. Note that the departure and airtime statistics may be unreliable when using this setting.

- **Departures Only** - This setting requires that planned and actual departure times exist in the flight data. Typically this setting is useful for searches that focus on departure statistics. Note that the arrival and airtime statistics may be unreliable when using this setting.

- **None** - This setting will not include data quality filters for your search results.

View Data Quality Details

To view the specific filters for each data quality setting, click the **Details** button. The **Data Quality Details** window appears (Figure 50), which describes the parameters for the currently selected data quality setting. In this window you can view the expressions and values defined to filter your search results for a particular data quality setting.

An Example: In Figure 50, we see details for the data quality setting called "Standard." We would like to use this setting, as well as add our own filter for: Airtime: Actual - Planned. To do this, we will need to customize a data quality setting.

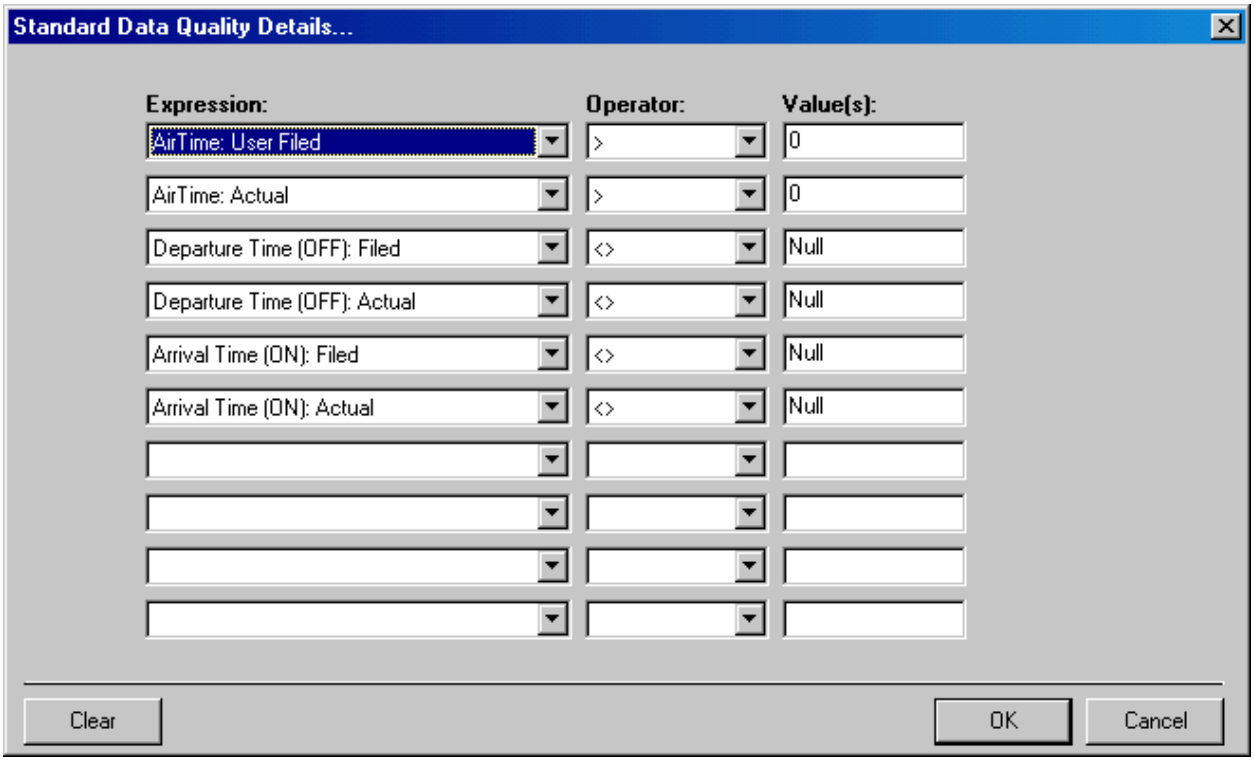


Figure 50: Data Quality Details (Standard Setting)

Create a Custom Data Quality Setting

To create a custom setting for Data Quality, pull up the Data Quality Details window and fill in the Expressions, Operators, and Values to your preferred settings.

1. **Expression**: The Expression is the actual data element for which you wish to define a quality range. For example, to look for flights that had a particular actual en route time, you would select Air Time: Actual as your expression and then enter a valid range for that data element. There are several expressions available, including arrival and departure times and circular holding.

2. **Operator**: The Operator allows you to determine the parameters for the selected Expression (e.g., Filed Air Time). The following operators may be available, depending on the selected Expression:

= (Equal to)
< (Less than)
> (Greater than)
<= (Less than or equal to)
>= (Greater than or equal to)
<> (Either less than or greater than)

Between: When "Between" is selected, a box labeled "And" will appear to the right of the Operator. This will allow you to input the range.

3. **Value(s)**: This field defines the actual numeric value of the selected performance metric.

Once you change the Data Quality ranges to your liking, click **OK**. The **Data Quality Setting** should now read "**Custom**."

An Example: Remember, we want to filter flights whose actual air time is 120 minutes or more greater than their planned (user-filed) air time. To do this, click on the Data Quality Tab in the Search Builder Window. Your Data Quality Setting should be "Standard." If it is not, use the pull-down menu to view the Data Quality options and click on "Standard." Now, click the Details button to view the Data Quality Details button. We want to use the Standard setting with an additional modification. In the Data Quality Details window, use the pull-down menu next to a blank field under "Expression" to view all the options for Expressions and click Air Time: Actual - User Filed (Figure 51).

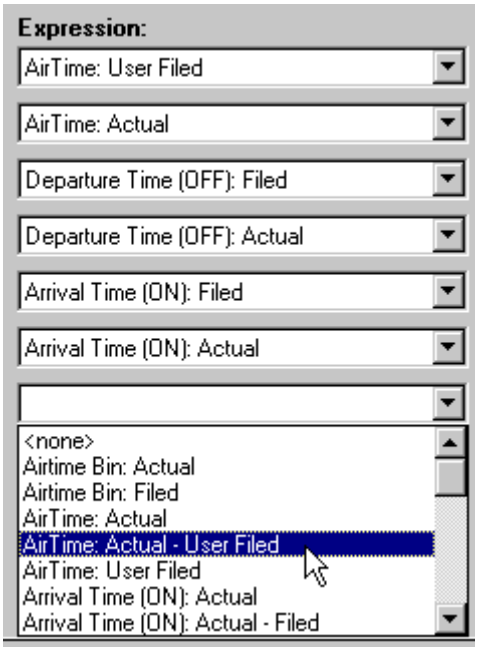


Figure 51: Select Air Time: Actual - User Filed

An Example: Once you have chosen your Expression, choose the Operator that means "less than." (Figure 52). Under the "Value" column, type in the number "120." (Figure 53). Now you should have a data range that means "the actual minus planned air time is less than 120 minutes." Click **OK** to get back to the Data Quality Tab. Your Data Quality Setting should read "Custom." In the next section you will learn how to save your custom setting.

Figure 52: Less Than

Figure 53: Value

Save Your Custom Data Quality Setting

To save your custom parameters click **Save**. The **Save Data Quality** window appears (Figure 54). Type in a name for your customized setting and any text description you feel necessary. POET saves the custom setting under that name. Your setting name now appears as an option in the Data Quality Settings pull-down menu.

An Example: Since we added an additional criteria to the Standard Data Quality Setting, we now have a setting called "Custom," which should be the setting currently shown in the Data Quality Setting field. We will save our custom setting as "Arrival Time Difference" so that this setting can be used in the future. Click **Save** on the Data Quality Tab. In the Save Data Quality window, type "Arrival Time Difference" in the Name field. We have also added descriptive text in the Description field to let other uses know that this setting is based on the Standard setting, with the addition of Air Time: Actual - Filed < 120. See Figure 54. Click **OK** to save the setting. You will be returned to the Data Quality Tab and the name **Arrival Time Difference** should be showing in the Data Quality Setting field.

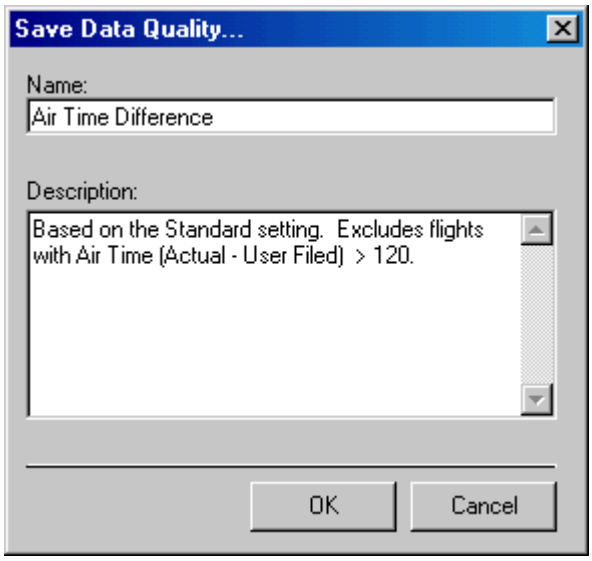


Figure 54: Save Data Quality Custom Settings

Figure 55: Data Quality Setting Now Reads Arrival Time Difference

Review Your Search Parameters

Once you have entered your search criteria, grouping parameters, and data quality settings in the Search Builder tabs, you are ready to run your search. Before you run your search, you may want to review the parameters you entered. To review your parameters, look in the box marked **Search** at the top of the Search Builder Window. This box contains all the parameters you set for your search. To change any parameters, click on the appropriate tab and make changes to the fields as necessary.

An Example: Note that in Figure 56, the criteria for our example search is summarized, including the information we entered in the Selection Criteria and Data Quality Tabs.

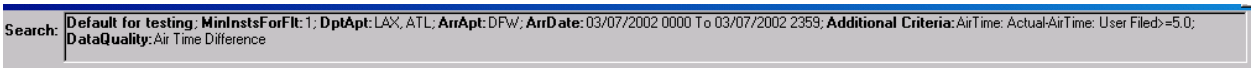


Figure 56: Search Criteria Summary

Create an Airspace-Based Search

Airspace-Based searches provide access to POET searches that provide detailed information about flights that were filed or flown through a particular airspace region. For example, if you needed to analyze congestion in a particular sector, you would want to conduct an airspace-based search.

Start Your Search

To start an Airspace-Based Search, click **Airspace-Based** under **Searches** on the POET Home menu.

Figure 57: POET Home Page Menu

Once you choose Airspace-Based Search from POET Home, the Search Builder Window for that function appears. In the Search Builder Window, you will define search parameters and actually run your search.

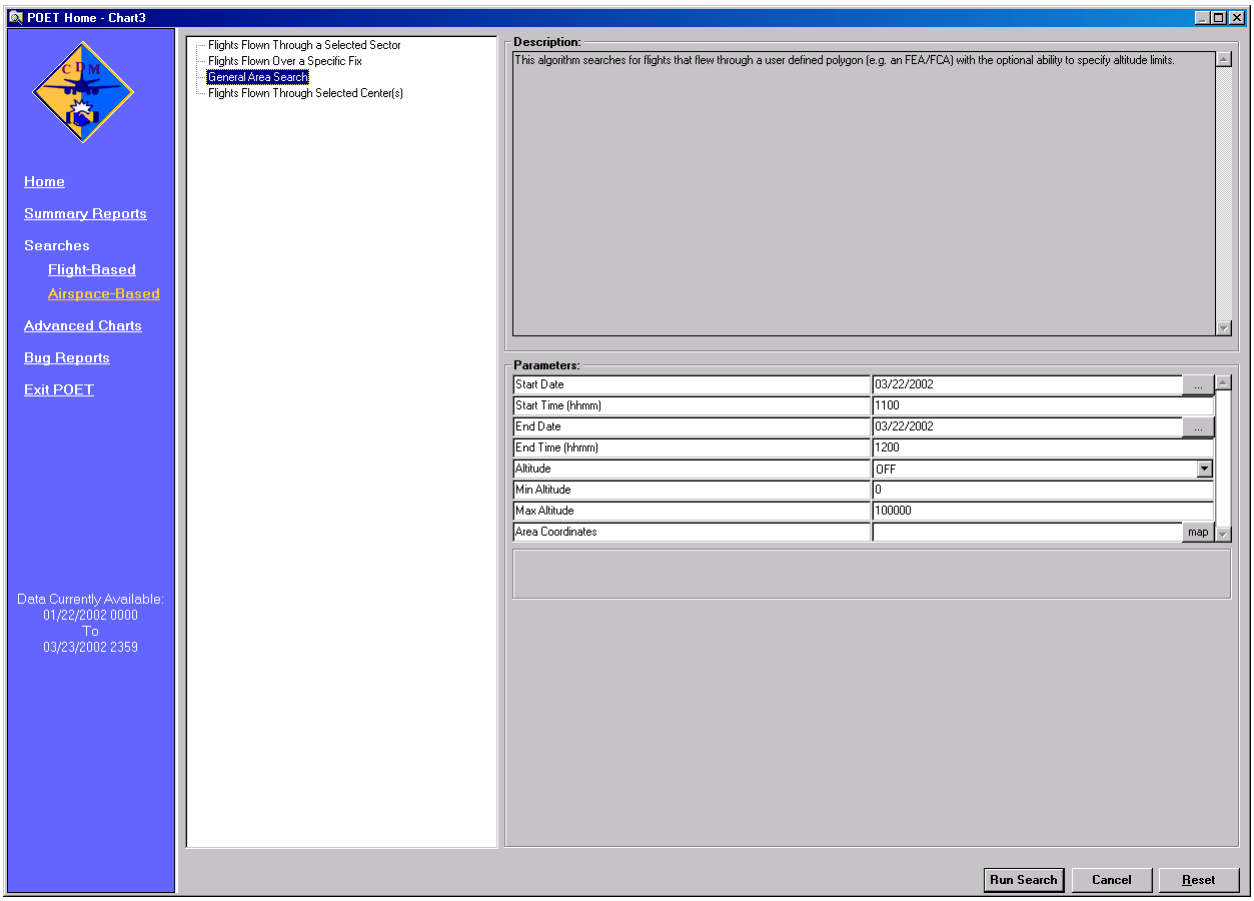


Figure 58: Airspace-Based Search Builder Window

Search Options

In the POET 2.1 release, there are several algorithms embedded in the Airspace-Based search: (1) **Flights Flown Through a Selected Sector**, (2) **Flights Flown Over a Specific Fix,** (3) **General Area Search**, and (4) **Flights Flown Through Selected Center(s).**

- **Flights Flown Through a Selected Sector** - This algorithm retrieves all that flew through the specified sector during the specified time range based on the actual track. Note that this algorithm may retrieve a large number of flights and take a long time to run if the time interval is set too large. Also, analysis has shown that some of the altitudes in the ETMS TZ messages are inaccurate. Thus, caution should be exercised in interpreting the results of this algorithm.

- **Flights Flown Over a Specific Fix** - This algorithm will find those flights that flew within X miles of the specified fix during the specified time. Note that this algorithm may take a long time to run if the time interval is set too large.

- **General Area Search** - This algorithm will find flights that actually go through the selected geographic area during the specified date and time range. Note that this algorithm may retrieve a large number of flights and take a long time to run if the date/time interval or size of the

geographic area is set too large. To select this algorithm, click the algorithm name in the Search Builder Window.

- **Flights Flown Through Selected Center(s)** - This algorithm searches for flights that flew through a user-defined polygon (e.g. an FEA/FCA) with the optional ability to specify altitude limits.

Search Parameters

The first step to create a new Airspace-Based search in POET is to define your search. For Airspace-Based searches, this means you must select a search *algorithm* and set the algorithm *parameters* to conduct a search. You define your search using the Airspace-Based Searches **Search Builder Window** (Figure 58).

Once you select an algorithm its parameters appear in the lower right of the Search Builder window. The parameter fields are filled in with default values that you can change as necessary. Figure 59 shows the algorithm parameters for Flights Flown Through a Selected Area.

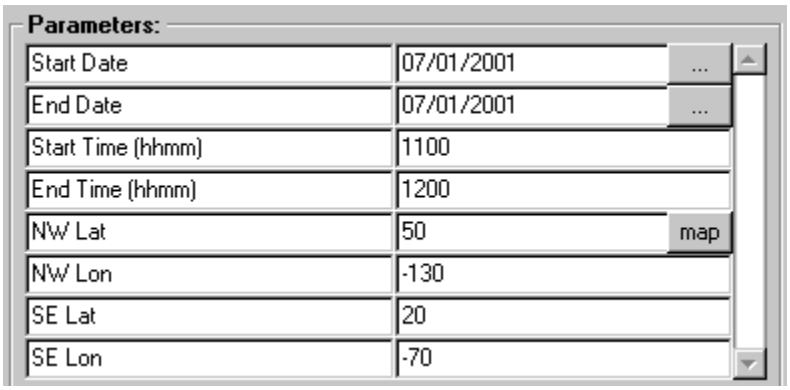


Figure 59: Algorithm Parameters

Date Parameters

- **Date** - POET will search for flights that flew on this date. You can type a date directly into the field in MM/DD/YYYY format or select a date from the calendar.

- **Start Date** - POET will search for flights that flew on or after the date you enter in this field. The default date is the most recent day for which POET has data. You can type a date directly into the field in MM/DD/YYYY format or select a date from the calendar.

- **End Date** - POET will search for flights that flew on or before the date you enter in this field. The default date is the most recent day for which POET has data. You can type a date directly into the field in MM/DD/YYYY format or select a date from the calendar.

SHORTCUT ALERT!

When you input start and end dates, POET provides a pop-up calendar. To access the calendar, click the button to the right of any start or end date fields. The button is marked with "…". Once you click the button, a pop-up calendar appears. By default, the calendar displays the date currently entered in the Date field. You can use the right and left arrow buttons to scroll through the months for which POET contains data. Click a date to enter the date into the current field.

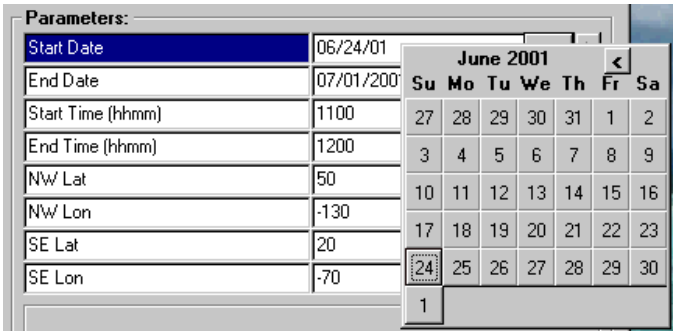


Figure 60: Airspace-Based Searches Pop-up Calendar

Time Parameters

- **Start Time (hhmm)** - POET will search for flights that flew on or after this time until the end time for each date you specified in your date range. For example, if you are analyzing the congestion pattern around the DFW area between 1200Z and 2200Z, you would enter "1200" in this field. Note that times are in Zulu.

- **End Time (hhmm)** - POET will search for flights that flew on or before this time for each date you specified in your date range. For example, if you are analyzing the congestion pattern around the DFW area between 1200Z and 2200Z, you would enter "2200" in this field. Note that times are in Zulu.

Geographic Parameters

- **Area Coordinates** - Some algorithms require you to define latitudes and longitudes such that they form a boundary around a specific airspace region. You can enter values by typing directly into a field or use the map to draw an airspace region with your mouse.

SHORTCUT ALERT!

To use the map, click the **Map** button to the right of the Area Coordinates field. This displays a U.S. map for you to define an airspace region. Ctrl+click to start your polygon. Click and drag your cursor to create a line in the polygon. Click once to end a line.

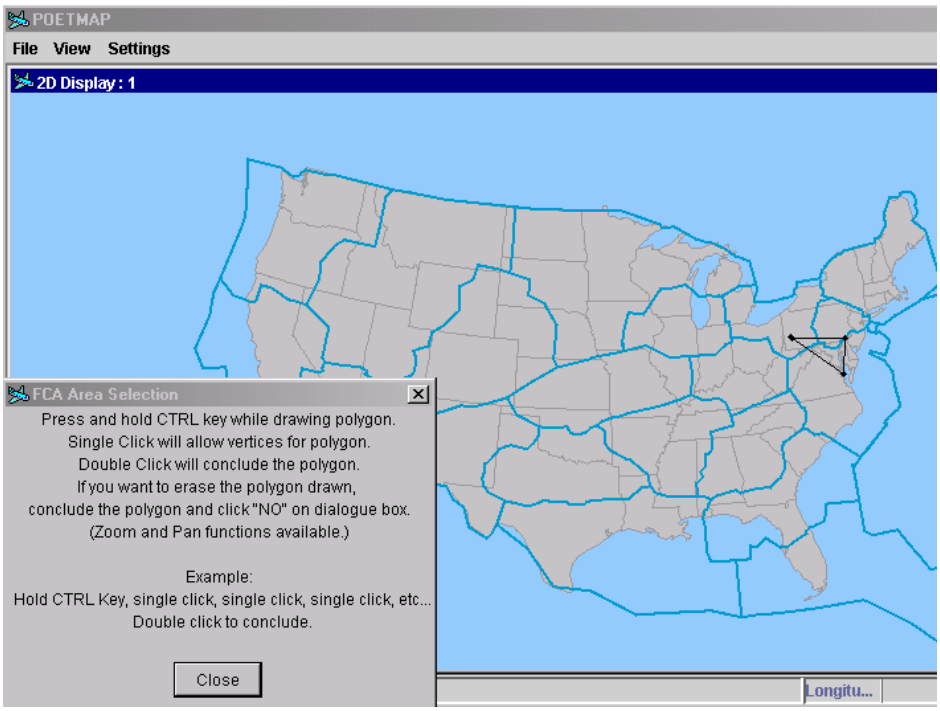


Figure 61: Draw an Airspace Region on the Map

Double-click to complete your polygon. The map disappears and the latitude and longitude fields are automatically filled in with the values that match the area you defined.

Once you complete your polygon, a pop-up window indicates the coordinates of the polygon. Click **Yes** to accept these coordinates and use them in your analysis. Click **No** to clear the map and draw a new polygon.

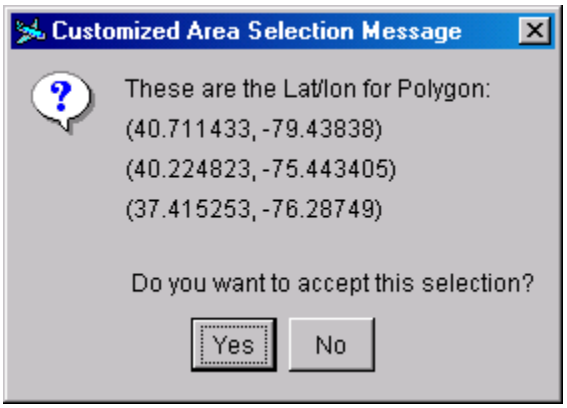


Figure 62: Accept or Reject Polygon Coordinates

- **Sector** - Enter the specific Sector whose traffic you wish to analyze. The sector should be made up of both the 3-character center code and sector number, as many sectors are not specific to a certain center. For example, ZOB48 indicates that you are interested in the traffic that transits ZOB center's sector 48.

- **Fix Name** - Enter the name of the fix whose area traffic you are studying.

- **Threshold** (miles) - Enter a value equal to the number of miles within a certain geographic point to define a traffic region. For example, if you are studying traffic within a 5 mile radius of a certain fix, you would enter "5" in the Threshold field.

- **Altitude** - To use the altitude fields, click the pull-down menu to the right of the **Altitude** field. Click to turn the altitude option "On" or "Off." When you turn the Altitude field "on," you can take advantage of the **Minimum** and **Maximum Altitude** fields to narrow your search. Note that POET does not automatically assume the altitude value entered is in thousands. If you enter "34," POET will search for flights that utilize an altitude of "34." To enter thirty-four thousand in the Maximum Altitude field, you must enter "34000."

Run and Save Your Report, Chart, or Search

Even though POET provides several functions from its Home window, including Summary Reports, Advanced Charts, and Searches, each of these functions is meant to assist you in analyzing the NAS. Although it may occur in the background, each of the POET functions requires POET to conduct a search for data that fit the parameters you input. To view the results, you need to *run* your search. Once you run your search, you can choose to save that search for later use. This chapter discusses the details of running and saving a search, as well as opening a saved search and working with search templates. Note that in this chapter, the word "search" refers to the search POET must conduct to perform the function you choose (Summary Report, Advanced Chart, or Flight-Based or Airspace-Based Search).

Run Your Search

After you have specified all the parameters for your POET function, you are ready to actually run the search. Note that the broader the parameters you set, the longer the search will take and the more flights you will receive in your search results. To run a search:

1. Click the **Run Search** button at the bottom right of a Search Builder Window.

OR

2. Press **Enter** on your keyboard.

As POET is running your search, you should see the **Executing Search** window (Figure 63). This window tells you the percentage of your search that has been completed, as well as gives a summary of your search criteria. Because of the size of the database, the search may take several minutes.

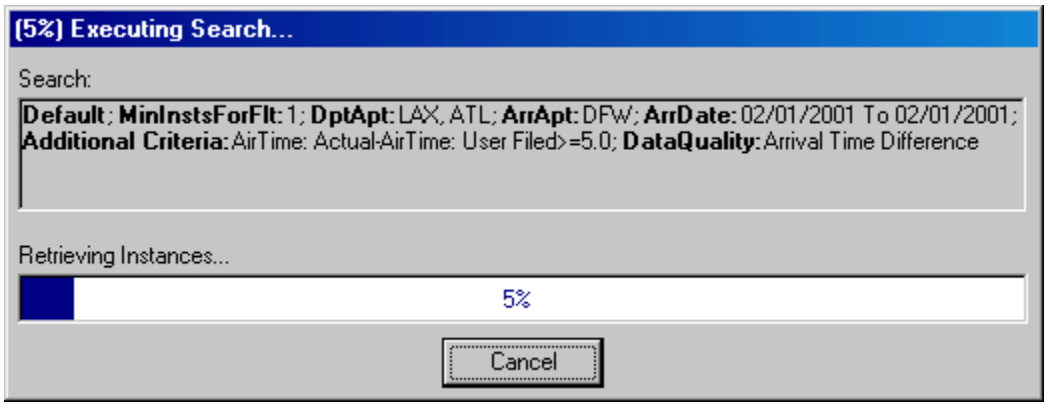


Figure 63: Executing Search Window

If your search is successful, your results should appear in the appropriate format according to the function you selected (i.e. if you ran an Advanced Chart, you should see your results in the form of a chart).

Interrupt a Search

You can always interrupt a search at any point during your POET session by pressing the **ESC** key on your keyboard. You can use this to stop a search from the Search Builder Window or any process in the course of viewing data in your search rsults.

No Search Results

If no flights match your search parameters, POET will give you a warning message (Figure 64). Click OK to return to the **Search Builder Window**. Using the Search Builder Window, you will need to broaden your search parameters (e.g., larger departure date range, more departure and arrival airports, etc.) to yield results.

Figure 64: No Matching Record Dialog Box

Large Search Results

If your search parameters are very broad, POET will warn you that the search may take a long time to complete. The warning will appear any time a search is estimated to take a few minutes to complete. Note that the actual search time can take more or less time than what the warning dialog anticipates. POET cannot exactly determine the search time without actually running the search. The warning dialog gives you the option to abandon your search and go back to the Search Builder Window to adjust your parameters.

Add Notes to Your Search

When you save your search, you can attach a note with the search. The note will appear the next time you open the search. This can serve as a convenient reminder if you close a search that you will be working with later. However, please note that once you close the note window, the note is deleted.

You should create a note right before you save a search. To save a note with a search, click the **Note** button on the POET Toolbar. Enter text in the Notes window. Leaving the Notes window open, save and close your search.

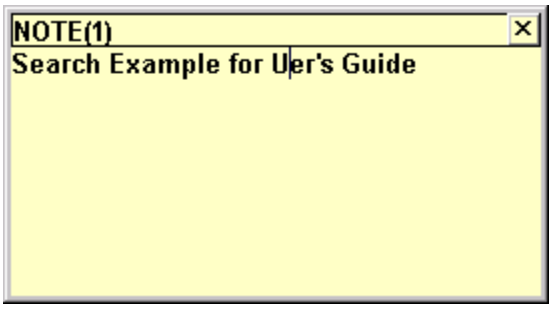


Figure 65: Sample Note

Save Your Search

You can save a search you have just run. To do this, you must be in the **Search Results display**, which appears after you have actually *run* a search. Note that when you save a search, POET creates a folder called "My Searches" in the POET directory. This is the default folder for saving your searches. If you do not want your searches saved in this folder, make sure you define a new file location when you save your search.

1. To save a search for the first time or save your search under a new file name: Click **File > Save As…** A pop-up window appears. Type a file name in the **File name** field and click on the **Save** button. By default, POET will name Summary Reports and Flight-Based or Airspace-Based Searches as "Search X.sch," where X is a numerical value equal to the number of searches you have run. It will name Advanced Charts as "Chart X.sch," where X is a numerical value equal to the number of Charts you have run.

2. To save changes to an existing search, click the **Save** button on the POET Toolbar, or select **File > Save**.

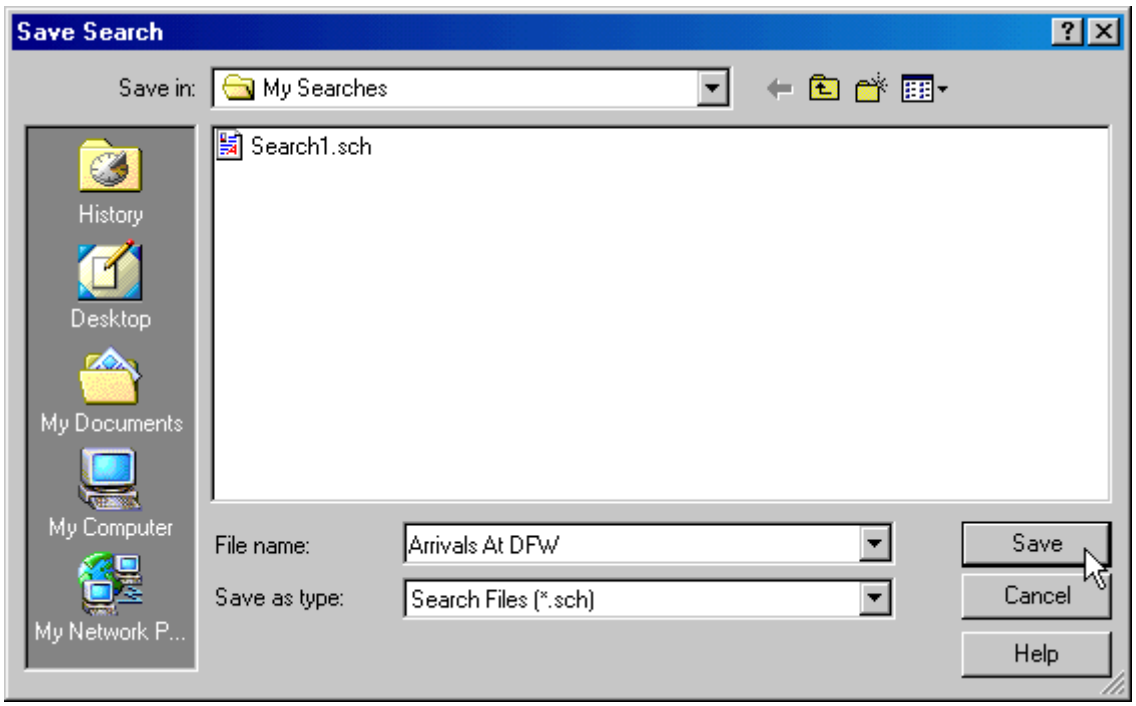


Figure 66: Save File (Windows/NT)

Saving a Summary Report

When you generate a Summary Report, POET generates a search and displays the results in a 3-window Search Results display that is the same as the results for an Airspace-Based or Flight-Based search. Using the **File > Save** option described above will save only this portion of the Summary Report as an "sch" file.

The Summary Report also generates several HTML files, which make up the actual report. This portion of the Summary Report is automatically saved to the "My Reports" folder in your POET directory. The main page of your report is saved with a name that matches the type of Summary Report you generate. The rest of the report pages are stored in a folder with the same name as the main report page. For example, in Figure 67 you can see that the user generated a Summary Report on Changed Arrival Fix on 07/10/01. The main page of the report is named "ChangedArrFix.htm." The pages that supplement that report are in the folder named "ChangedArrFix_res."

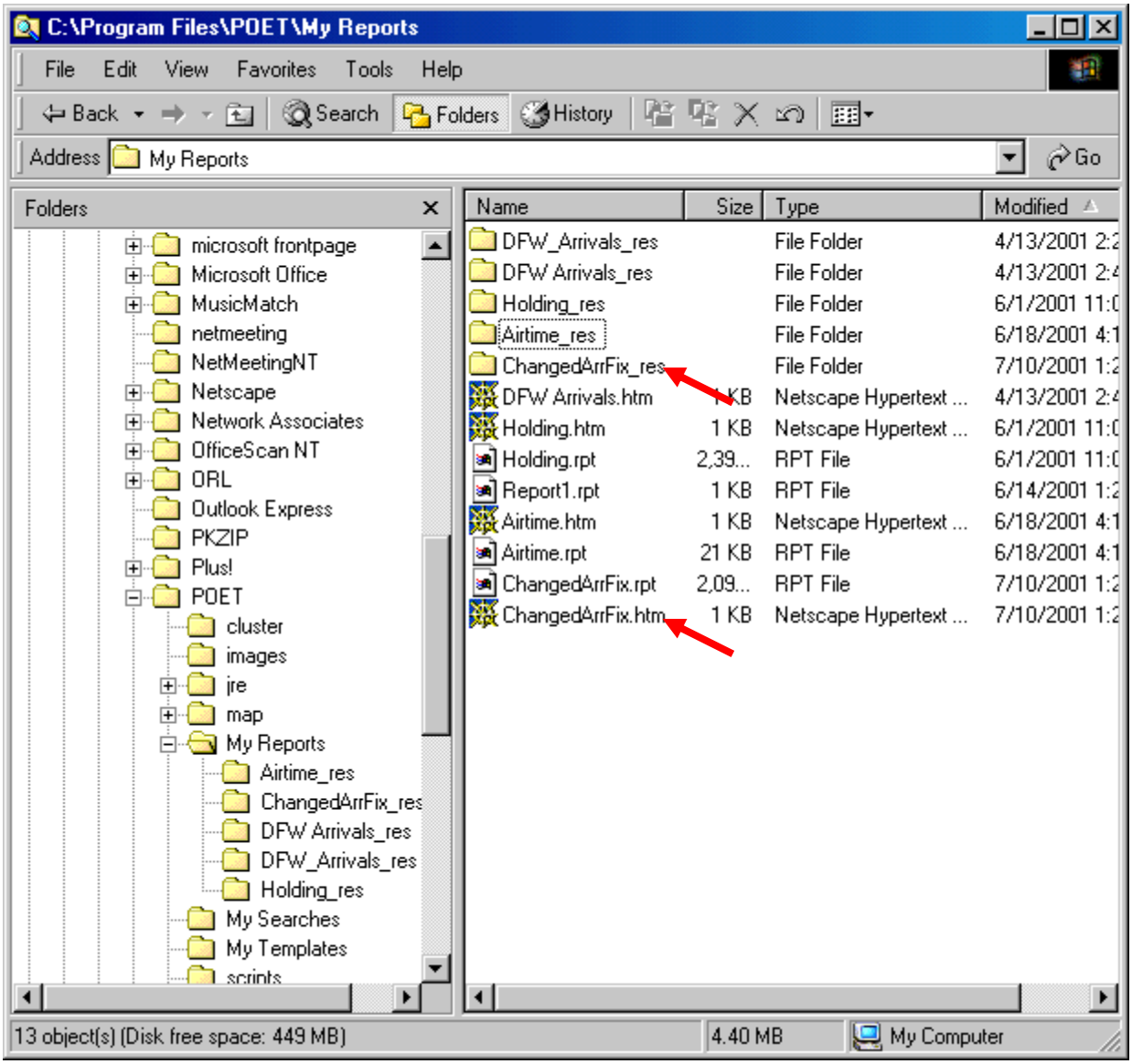


Figure 67: Saved Summary Reports in the POET Directory

Open a Saved Search

Once you have saved a search, you can always open that search in another POET session. To open a previously saved search, click **Open** on the POET Toolbar, or select **File > Open Search**. The Open Search window should appear. Figure 68 shows the Open Search window. The window will open your POET folder called My Searches by default. Select the appropriate search file and click **Open**. You will see either three search results window or a single chart, depending on the POET function you saved.

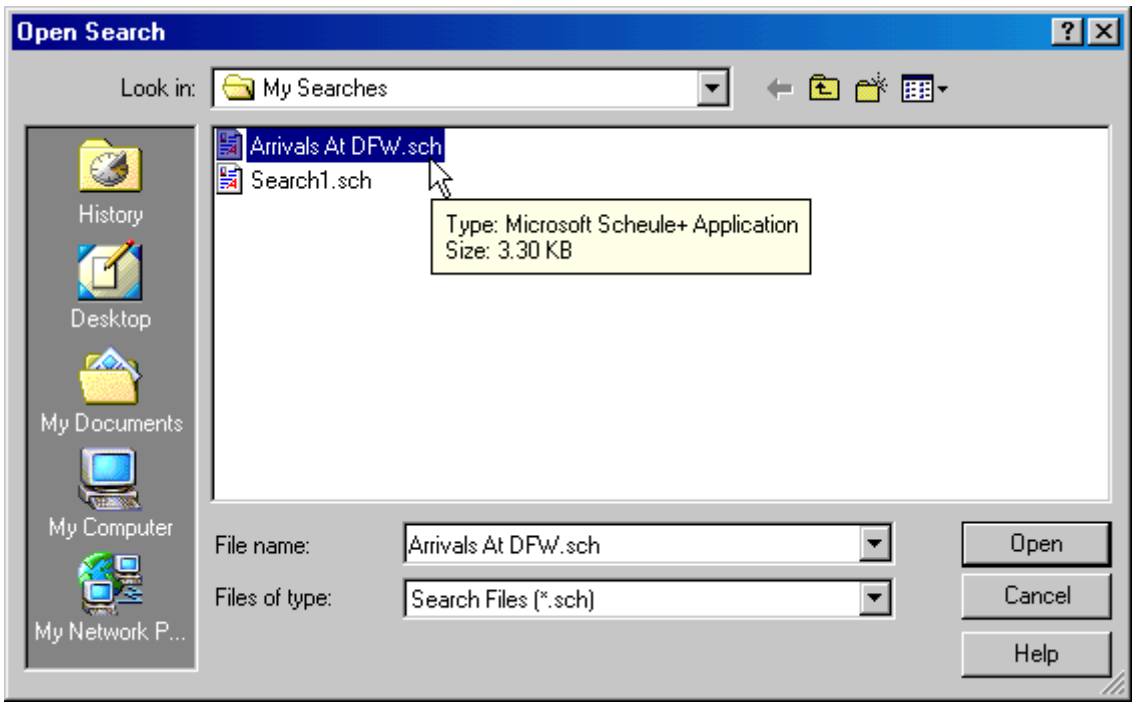


Figure 68: Open a Saved Search (Windows/NT)

Open a Summary Report

To open the search portion of a Summary Report, follow the directions above.

To open the report portion of the Summary Report, you will need to open the files using an Internet browser. Remember that POET saves the Summary Report as HTML files. User your browser menu to explore your computer and open the main HTML file of the Summary Report you want. Your Summary Report files are found in the "My Reports" folder in your POET directory.

Change your Search Setup

In some cases you may want to change the POET default settings for your search, search results, or log files. To enter new default settings, click **Edit > POET Properties**. The POET Properties window opens. Figure 69 illustrates the default settings for POET Properties.

An Example: For our example, we will leave the default values in the POET Properties window.

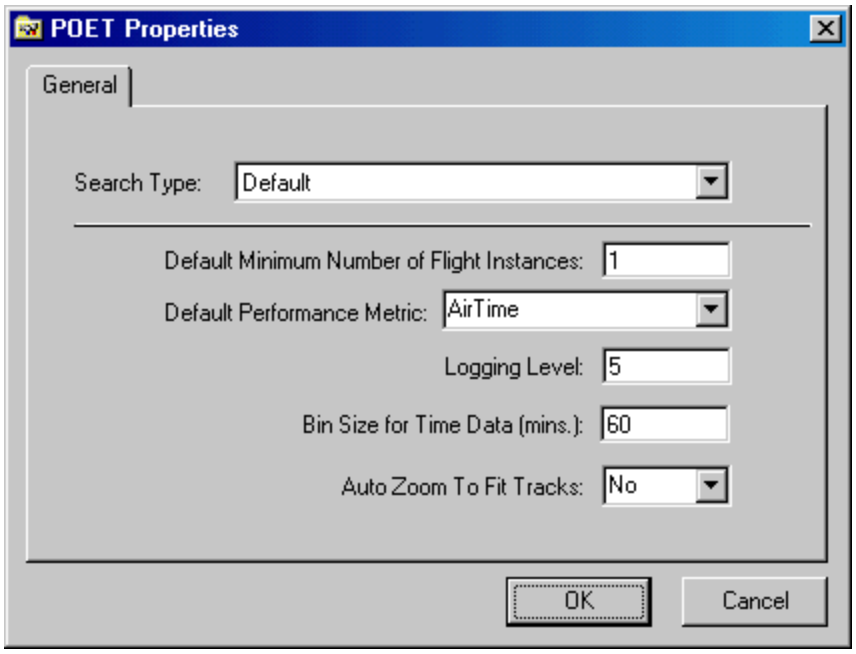


Figure 69: POET Properties

From this window you may change the following:

- **Search Type** - In some cases you may have more than one search type available. Most users will not use this feature. However, if you do have multiple search types available, click to pull-down the Search Type menu and click the desired option to select it.

- **Default Minimum Number of Flight Instances** - In the Search Builder Window's Selection Criteria tab, the default minimum number of flight instances defines how many flights must be present to make up a flight group in the search results. The default value is 1. To change the setting, type a new value into this field.

- **Default Performance Metric** - The default performance metric will be displayed automatically in your search results table. Other metrics are always available, but hidden until you choose to display them. To select a default performance metric, click to see the pull-down menu and click the option you want.

- **Logging Level** - The logging level affects POET's error logging. This field defines the amount of messages included in the log.txt file while you use POET. Defining a logging level does not affect POET's appearance. You will probably not need to change this value unless directed by POET Technical Support when help diagnosing a problem is needed. To change the logging level, type a value from 1-10 into this field.

- **Bin Size for Time Data (mins)** - The bin size (in minutes) will change the bin size for any data elements that include a time bin option (these are found in the Flight Groupings Tab in the Search Builder Window). For example, if you want your flights grouped according to their Arrival Time Scheduled Bin and your default bin size is 60 minutes, POET will group your flight results according to the hour in which they arrived. So all flights that arrived in the 1200 hour would be grouped in the same "bin." To change the default bin size, type a new value into this field.

- **Auto Zoom to Fit Tracks** - Use the pull-down menu to select "Yes" or "No." Selecting "Yes" will force the POET Map to automatically set its display to zoom in as closely as possible on flight tracks as soon as tracks are displayed. Selecting "No" will prevent the POET Map from performing any zoom automatically. Instead, you will have to manually set the zoom level.

Using a Search Template

Search Templates are a function specific to **Flight-Based Searches** and allow you to save your search parameters so you can run the same search without reentering the parameters. Unlike the Save Search option, saving a search template saves only the parameters you set for your data in the Search Builder Window without actually saving the search results. Likewise, when you open a search template, POET opens the Search Builder Window with the template parameters automatically set. However, you will still need to run the search to view your results.

Save a Search Template

If you want to reuse your search parameters in the future, you can save your search template before you run your search. However, if you are already in the Search Results display in POET, you can use the Back button on the POET toolbar to return to the Search Builder Window and save your search template.

To save a search template, click **Save Template** on the bottom-left of the Search Builder Window. You can save your search criteria at any time by clicking this button.

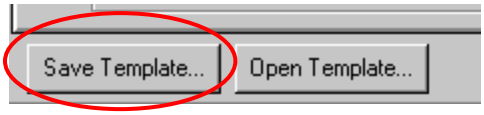


Figure 70: Save Template Button

A **Save Search Template** window opens. Note that when you save a search template, POET creates a folder in the POET directory called "My Templates." This becomes the default location to which your templates are saved. To choose another location for your template file, you must browse your computer directory.

Type a file name for your search template and click **Save**. If you name the file "Default," it becomes your default template and those parameters will automatically appear when you click **Reset** on the Search Builder Window or start a new search.

An Example: In your example search, navigate back to the Search Builder Window. You may have to use the **Back** button on the POET Toolbar to get to the Search Builder Window. From that window, click **Save Template**. When the Save Template window opens, type Arrivals at DFW into the file name field and click **Save**. (Figure 71).

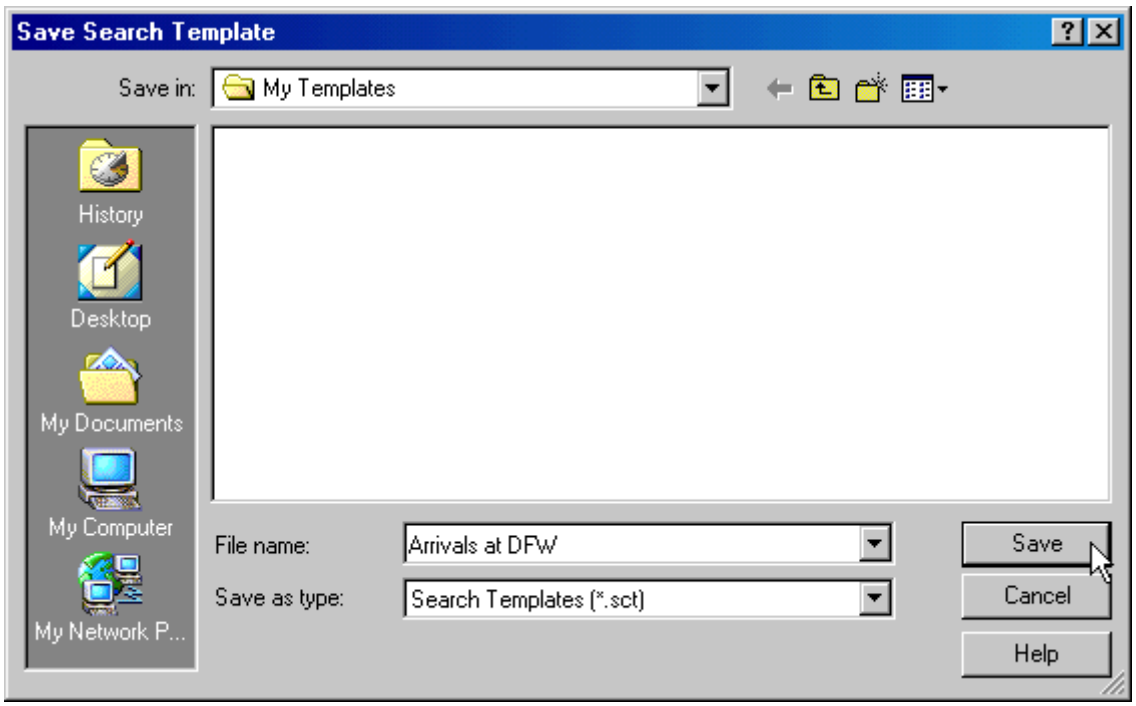


Figure 71: Save Search Template

Open a Search Template

Instead of entering search and grouping parameters for a new search, you can use a previously saved template that contains the parameters you want. Click **Open Template** at the bottom of the Search Builder Window (Figure 72).

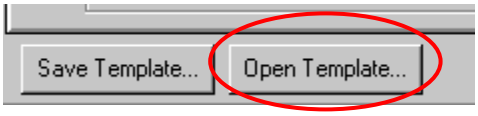


Figure 72: Open Template Button

POET will open the Search Builder Window with all the parameters from the template entered in the appropriate fields. You can make changes to any of the search or grouping parameters *after* you open the template.

An Example: To use your search criteria again, open your **Arrivals at DFW.sct** file that you saved in the Flight-Based Searches example. Click Open Template in the Search Builder Window. When the Open Template window opens, click Arrivals at DFW.sct to select that file and click OPEN. (Figure 73).

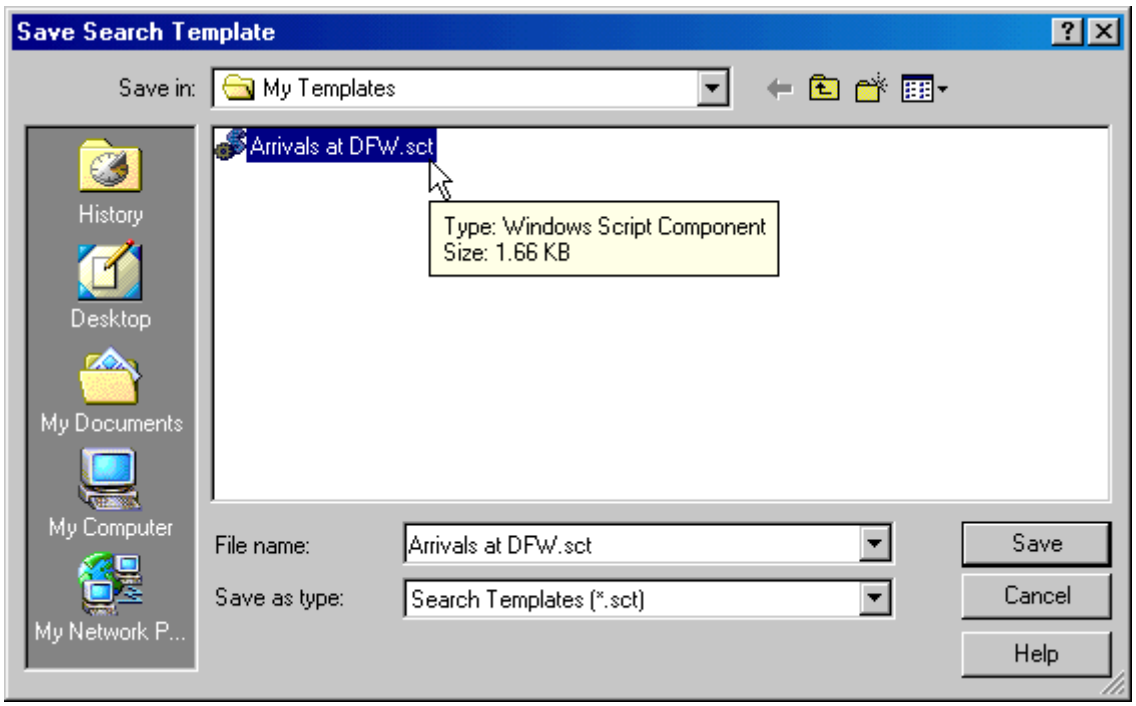


Figure 73: Open Search Template

View A History of Searches

Because you may have run any number of functions during a single POET session, it is sometimes useful to go back to view a previous POET screen from one of your earlier searches. You can do this through the **History** function. You can access the History function in one of two ways:

- Select **View > History** from the POET menu.
- Select the **History** button from the POET **Tool Bar**.

A window appears on your screen listing the searches run in POET by name (Figure 74).

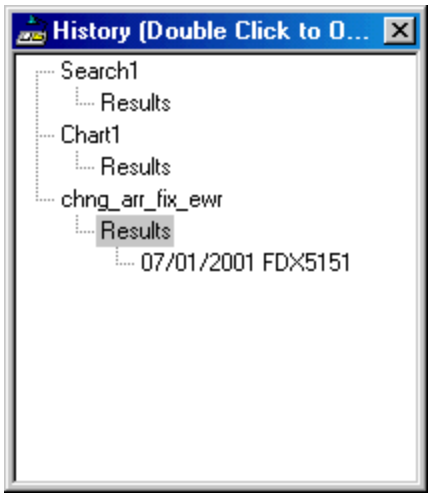


Figure 74: History Window

In the History window, each screen you viewed in a previous search is listed under its search name. If you did not save your searches under a particular name, your searches will be listed as Search 1, 2, 3, etc. Advanced Charts will be listed as Chart 1, 2, 3, etc. Double-click any search name or any of the search screen names to pull up that particular screen for the search under which it is listed.

Double-clicking the *search name* (e.g. Search 1) will take you back to the Search Builder Window for that search. From this display, you could review the search parameters you used for the search.

Likewise, let's say in Search 1 you searched for all flights on 12/16/2000 for XYZ airline. If you pulled up the Flight Details window for XYZ1234 you would see '12/16/2000XYZ1234' listed under Search 1. Double-clicking that listing would bring up the Flight Details window again.

An Example: Note that in Figure 74, we have run two searches and an Advanced Chart. You can tell from the History window that we ran a search named chng_arr_fix_ewr, viewed the results, and looked at flight details for FDX5151 on 07/01/2001.

View Search Results

When you run a Summary Report, Flight-Based Search, or Airspace-Based Search, POET displays the results in the **Search Results Display**. The Search Results display is made up of three windows that each gives a different view of your search results: The **Search Results Table**, **Search Results Chart**, and the **Search Results Map**. You will use the Search Results display windows to not only look at your results, but also analyze those results. This chapter discusses viewing the results in the Search Results Table and the detailed flight information POET contains. To learn more about analysis using the table, charts, and map, see later chapters on those subjects.

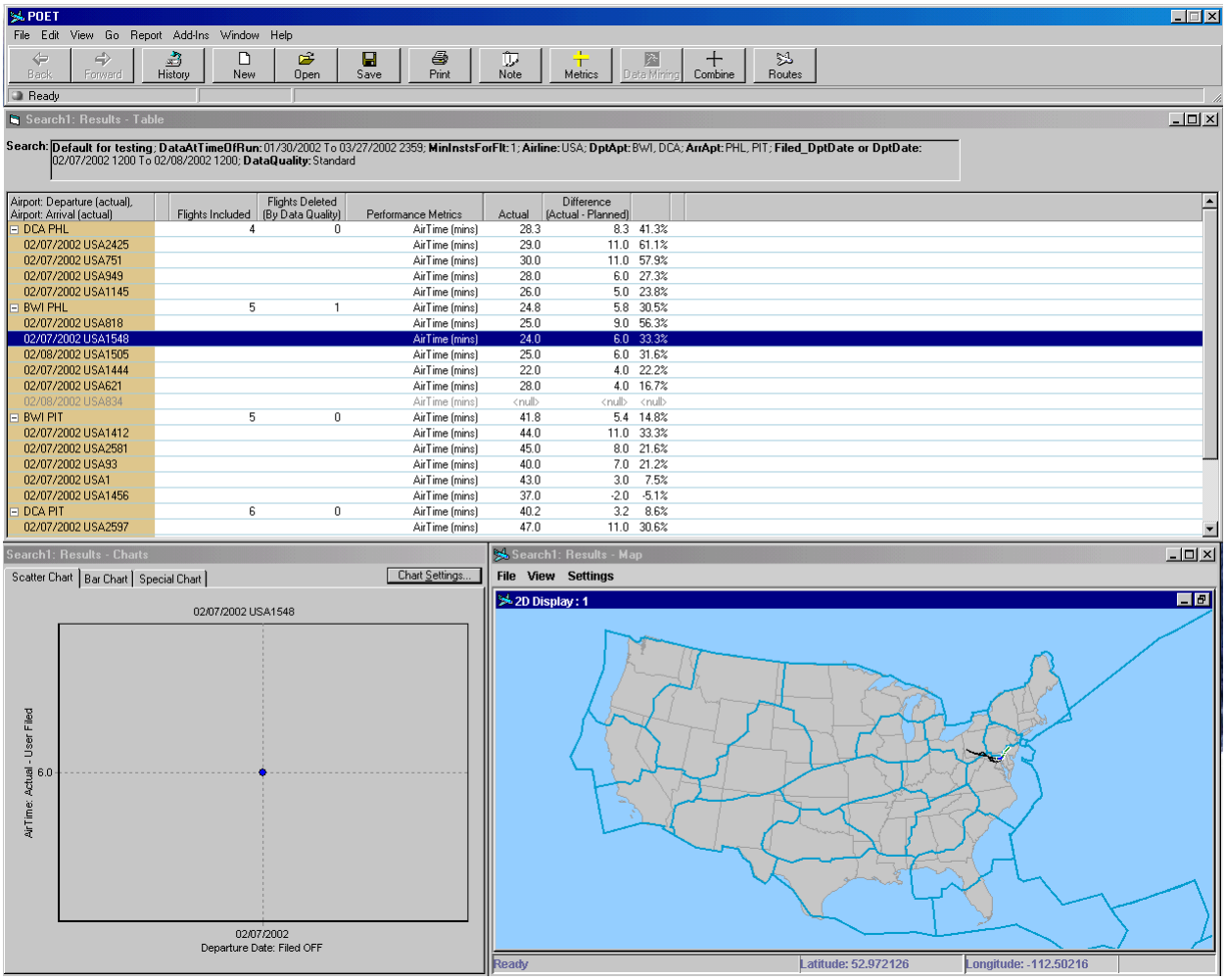


Figure 75: Search Results View

The Search Results Table

The Search Results Table is the top window in the Search Results display (in the POET default view). Flights that match your search criteria are listed in rows and grouped according the flight group parameters you set in your search. You can expand the rows to "drill down" to a particular flight as well

as delete and reinstate flights in the table. You can customize the way you view your results in this window as well as view detailed information for each flight using POET's customization functions.

Customizing the Search Results Table

In the Search Results Table, your flight results appear as flight groups in rows ordered from best to worst in terms of the difference between performance metrics. You can further modify your display by changing column spacing, sorting the data, and eliminating or reinstating flights in the table.

Changing Column Size

Drag the edge of a column header in order to change the column size. To do this, place your mouse pointer on the divider of the column heading that you want to resize. A double arrow (↔) will appear. You can then widen or narrow the column by dragging it until the columns are the desired size. See Figure 76 for an example of how to change column sizes.

Figure 76: Changing Column Spacing

Sorting Column Data

Double-click on a particular column name to sort the results according to that column in either ascending or descending order. When the column contains more than one field to sort by, double-clicking on the column name will pop-up a small window that lists the fields in the column. Click the particular field you want to use for sorting. In Figure 80, the user has sorted their flights according to Planned Air Time. Notice that the results are sorted in ascending order, from those flights whose Planned Air Time is unavailable, to those flights with the longest Planned Air Time.

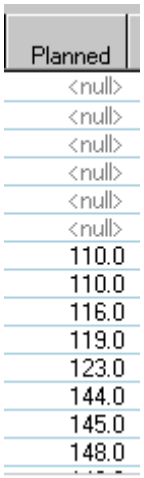


Figure 77: Sort By Air Time (Planned)

View Flight Groups and Individual Flights

When the Search Results Table first appears, flights meeting the criteria that you designated in the Selection Criteria tab will be displayed in groups according to the parameters you selected in the Flight Groupings Tab.

To get information about individual flights, you must drill down to the flight instance level. To do this, simply double-click the row when a plus symbol (+) appears next to a flight group. You will then see individual flights listed in each row according to date and call sign.

Airport: Departure (actual), Airport: Arrival (actual)	Flights Included	Flights Deleted (By Data Quality)	Performance Metrics	Actual	Difference (Actual - Planned)	
⊟ DCA PHL	4	0	AirTime (mins)	28.3	8.3	41.3%
02/07/2002 USA2425			AirTime (mins)	29.0	11.0	61.1%
02/07/2002 USA751			AirTime (mins)	30.0	11.0	57.9%
02/07/2002 USA949			AirTime (mins)	28.0	6.0	27.3%
02/07/2002 USA1145			AirTime (mins)	26.0	5.0	23.8%

Figure 78: View Flights that Make Up a Flight Group

An Example: In Figure 78, we clicked on the flight group at the top of the Search Results Table after we ran our search. This flight group was only made up of 4 flights, which are listed directly below the flight group heading.

To hide the individual flights, double-click the flight group heading that contains those flights.

Flight Tracks on the Map

Once you expand the rows in the Search Results Table to reveal individual flights, the flight tracks for that group of individual flights will appear automatically on the map. Note that while in most cases, flight tracks do not appear until you get to the flight instance level in the Search Results table, tracks may automatically appear at other times. To change the appearance of flight tracks using the Search Results Table, **right-click** anywhere on the table and select **Routes** from the pop-up menu. For more information on flight track colors, see the section titled "View Flight Information on the Map" on page 103.

Delete and Reinstate Flights

After a search is run some flights or flight groups may have been deleted (grayed out) from the analysis by the data quality filters. You may choose to delete additional flights or flight groups from your analysis. Deleting flights/flight groups is useful if you want to remove outlying data points from the analysis. Once a flight or flight group has been deleted, you also have the option to reinstate it into your analysis.

Delete Flight(s)/Flight Group(s)

1. Select the flight(s) or flight group(s) you wish to delete. To select a single flight or flight group, click on the flight or flight group row. To select multiple flights or flight groups, click and drag your cursor across a range of flights or flight groups or ctrl-click the flights or flight groups you want to delete. Your selection should be highlighted.

2. After you make your selection, select **Edit > Delete** from the POET main menu or simply press **Delete** on your keyboard.

3. Deleted flights and/or flight groups are grayed out in the Search Results Table and will be removed from your analysis. Deleted flights also affect your scatter chart, bar chart and map. Deleting a flight from the Search Results Table will gray out the corresponding points from the scatter chart and remove them from the bar chart and the map.

Reinstate Flight(s)/Flight Group(s)

1. Select the deleted flight(s) or flight group(s) you wish to reinstate. Remember deleted flights and flight groups are grayed out in the Search Results Table. To select a single flight or flight group, click on the flight or flight group row. To select multiple flights or flight groups, click and drag your cursor across a range of flights or flight groups or ctrl-click the flights or flight groups you want to reinstate. Your selection should be highlighted.

2. Once you make your selection click **Delete** on your keyboard. You can reinstate individual flights or flight groups at any level in the Search Results Table.

3. Your reinstated flights and/or flight groups should appear in black in the Search Results Table and are included in your analysis.

Detailed Search Results- the Flight Window

Double-click the desired flight groups in the Search Results Table until you see individual flights listed in rows according to date and call sign. When you view individual flight information in the Search Results Table, you can get detailed information about that flight in the **Flight Window**. The Flight Window provides the most detailed flight information for an individual flight in POET. The Flight Window contains three tabs, each with different information about the flight: **General Information** (Call Sign, Airline, Arrival Fix, Bin, etc), **Performance Metrics**, and **Routing Information**.

To view the Flight Window, double-click on a flight in the Search Results Table or double-click on a point in the Scatter Chart (see Scatter Chart on page 88).

General Information Tab

General Information includes everything from the flight's call sign to the departure center (filed) (Figure 79). Note the track of the flight selected is also shown on the POET Search Results Map.

An Example: Double-click a flight group to drill down to individual flights. Double-click an individual flight to get to the Flight Window, which details Flight Level Search Results. Figure 79 illustrates the General Information Tab in the Flight Level Results for USA949.

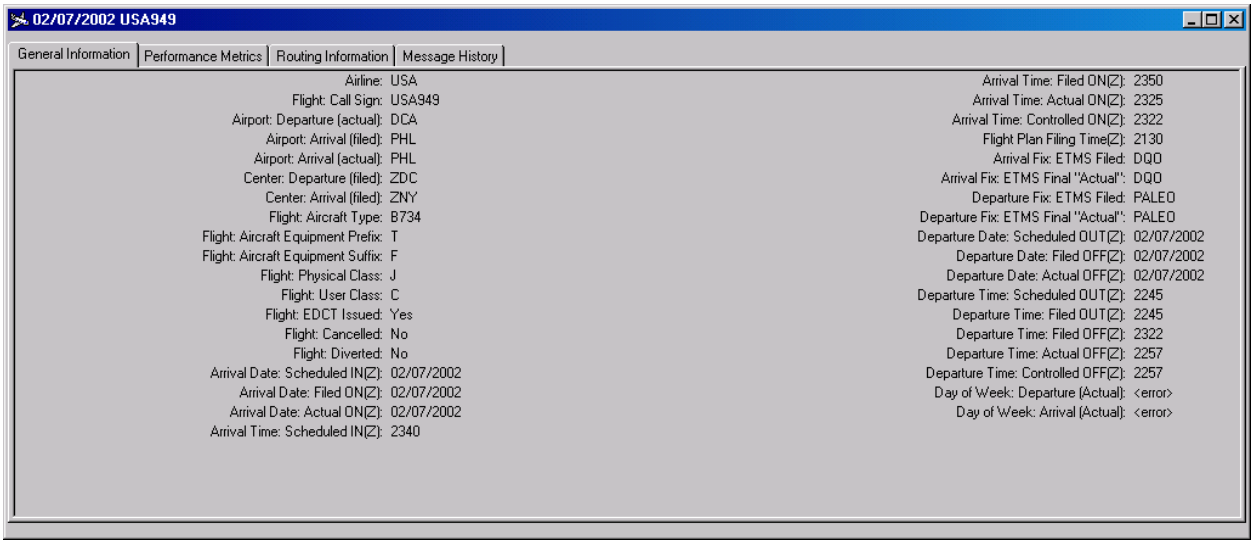


Figure 79: General Information Tab for USA949

Performance Metrics Tab

The Performance Metrics tab includes information on the flight's **Planned versus Actual** performance for a variety of metrics. Note that **NRP**, **Circular Holding**, and **Changed Arrival Fix** will always be either Yes or No. See Figure 80 for an example of the Performance Metrics Tab.

An Example: Figure 80 illustrates the Performance Metrics Tab in the Flight Window for USA949.

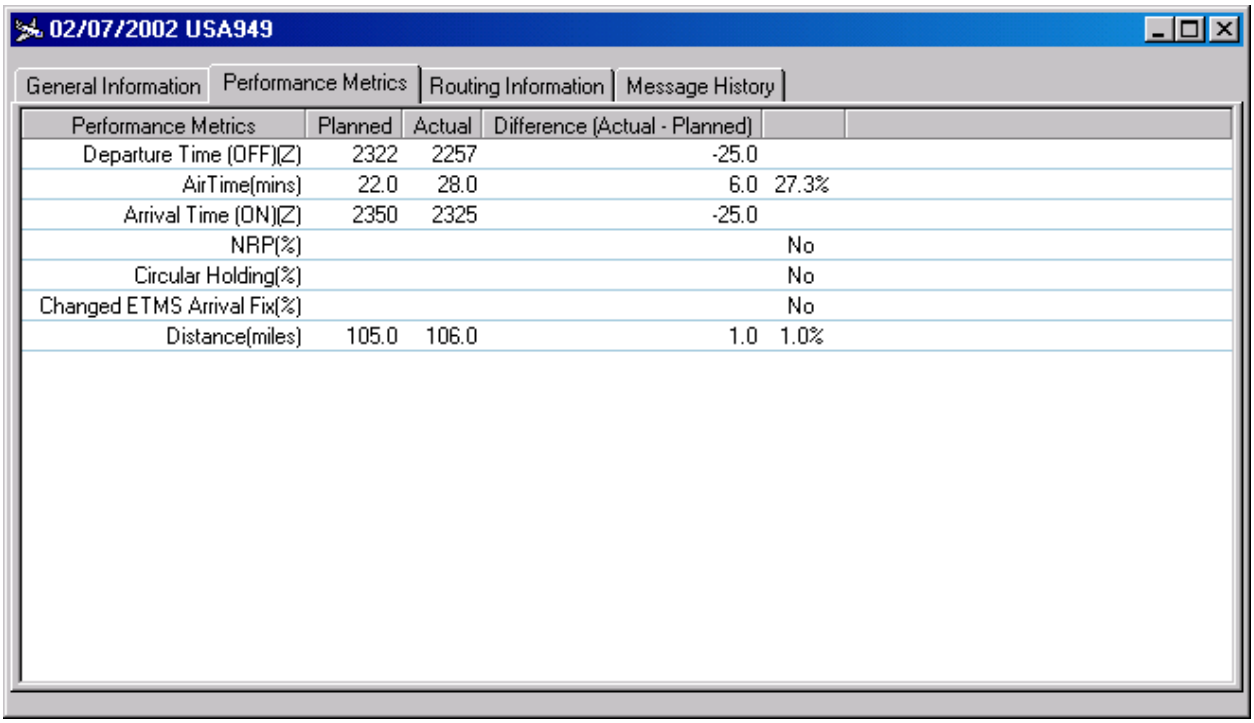


Figure 80: Performance Metrics Tab

Routing Information Tab

The Routing Information Tab includes information about a flight's filed route, any amendments made to the route, and the actual route. Clicking on the filed route, route amendments or the actual route in the Route Information Tab will highlight the appropriate track on the Search Results Map. To highlight multiple tracks on the map, you can ctrl+click or click and drag through the routes in the Routing Information Tab.

An Example: Note that the Routing Information Tab in Figure 81 indicates several route amendments for a flight. This information can be very important, depending on the type of analysis being conducted.

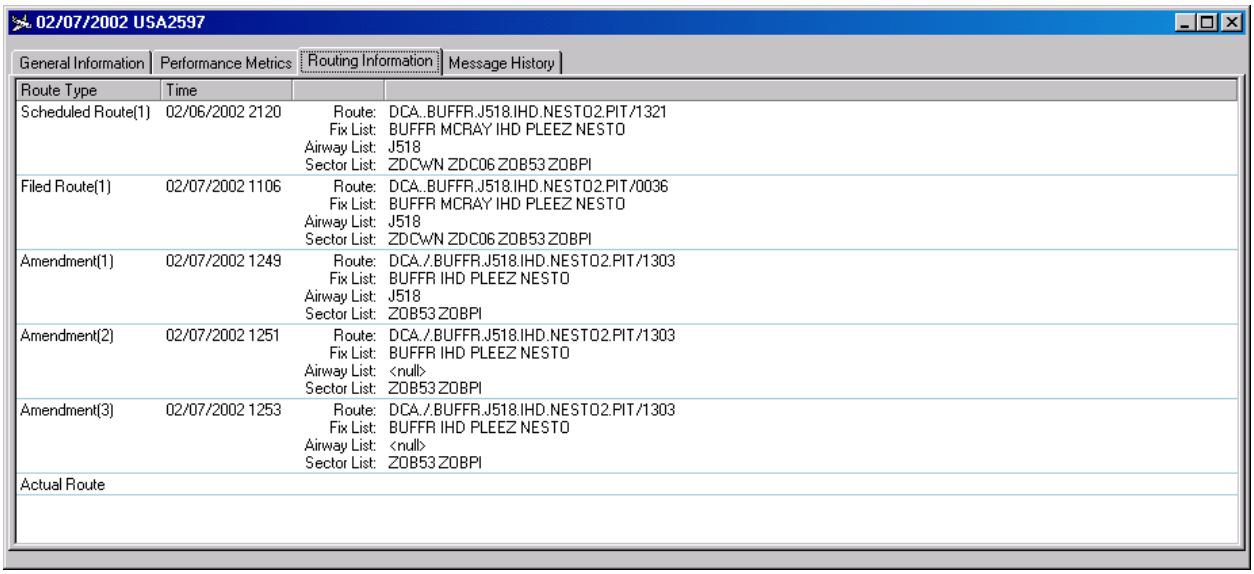
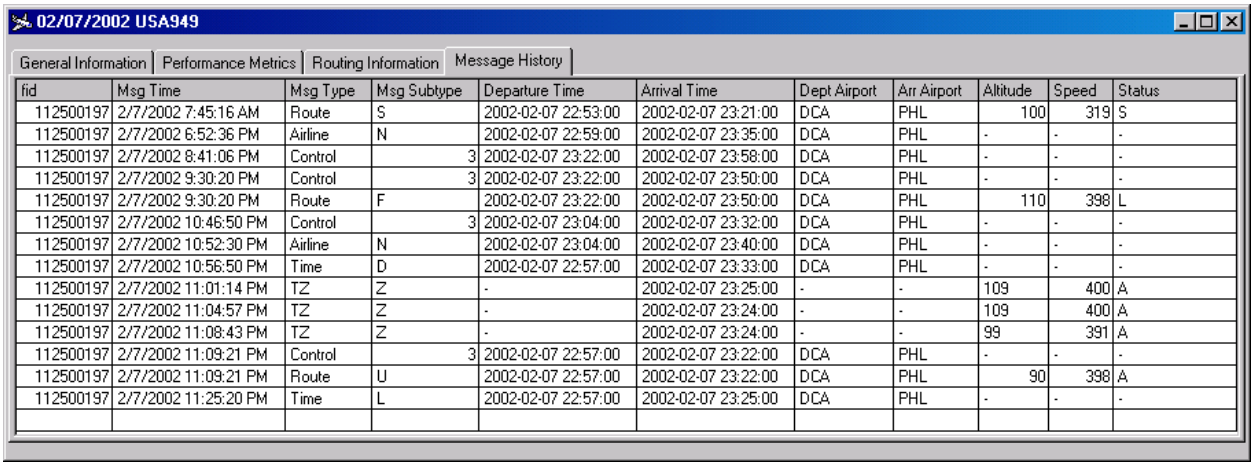


Figure 81: Routing Information Tab

Message History Tab

The Message History Tab contains flight messages received by ETMS. The Message Type and Message Subtype columns indicate where the message originated.



fid	Msg Time	Msg Type	Msg Subtype	Departure Time	Arrival Time	Dept Airport	Arr Airport	Altitude	Speed	Status
112500197	2/7/2002 7:45:16 AM	Route	S	2002-02-07 22:53:00	2002-02-07 23:21:00	DCA	PHL	100	319	S
112500197	2/7/2002 6:52:36 PM	Airline	N	2002-02-07 22:59:00	2002-02-07 23:35:00	DCA	PHL	-	-	-
112500197	2/7/2002 8:41:06 PM	Control	3	2002-02-07 23:22:00	2002-02-07 23:58:00	DCA	PHL	-	-	-
112500197	2/7/2002 9:30:20 PM	Control	3	2002-02-07 23:22:00	2002-02-07 23:50:00	DCA	PHL	-	-	-
112500197	2/7/2002 9:30:20 PM	Route	F	2002-02-07 23:22:00	2002-02-07 23:50:00	DCA	PHL	110	398	L
112500197	2/7/2002 10:46:50 PM	Control	3	2002-02-07 23:04:00	2002-02-07 23:32:00	DCA	PHL	-	-	-
112500197	2/7/2002 10:52:30 PM	Airline	N	2002-02-07 23:04:00	2002-02-07 23:40:00	DCA	PHL	-	-	-
112500197	2/7/2002 10:56:50 PM	Time	D	2002-02-07 22:57:00	2002-02-07 23:33:00	DCA	PHL	-	-	-
112500197	2/7/2002 11:01:14 PM	TZ	Z	-	2002-02-07 23:25:00	-	-	109	400	A
112500197	2/7/2002 11:04:57 PM	TZ	Z	-	2002-02-07 23:24:00	-	-	109	400	A
112500197	2/7/2002 11:08:43 PM	TZ	Z	-	2002-02-07 23:24:00	-	-	99	391	A
112500197	2/7/2002 11:09:21 PM	Control	3	2002-02-07 22:57:00	2002-02-07 23:22:00	DCA	PHL	-	-	-
112500197	2/7/2002 11:09:21 PM	Route	U	2002-02-07 22:57:00	2002-02-07 23:22:00	DCA	PHL	90	398	A
112500197	2/7/2002 11:25:20 PM	Time	L	2002-02-07 22:57:00	2002-02-07 23:25:00	DCA	PHL	-	-	-

Figure 82: Message History Tab for USA949

Export Flight Information

Once you get to the Flight Window and view data for an individual flight, you can export that information. Select **File > Export Instance as HTML**. This will export each tab in the Flight Window to an HTML page. You can open the HTML page using an Internet browser.

Analysis Using the Search Results Table

Effective flight analysis is the primary goal of POET. Because the options and tools available in the program allow you to fully view and customize your search results, analysis can be as general or as specific as you want. In this section you will learn how to use **Performance Metrics** and **Data Mining** in the Search Results Table to gain more information about your flight groups and individual flights.

View Performance Metrics

Performance Metrics provide descriptive information about the actual performance of a flight or flight group (departure/arrival times, total time in the air) as compared to the planned performance. The list of performance metrics is constantly growing and currently includes **Distance**, **Air Time (%)**, **Off Time (mins)**, **On Time (mins)**, **NRP**, **Circular Holding**, and **Changed Arrival Fix**.

Available FAA Performance Metrics

- **Distance** compares the filed flight track (calculated using the length of the ground track of the filed route) to the flown flight track (calculated using the length of the ground track actually flown). Distance is calculated in miles.

- **Air Time** is the difference between the estimated time en route from the user-filed flight plan and the actual time air time (calculated using AZ-DZ). A "+" indicates longer than planned; "-" indicates shorter than planned.

- **Departure Time (Off)** is the difference in minutes between the planned departure time (calculated using the ETMS-modeled OFF time based on the filed flight plan [FZ]) and the actual departure time (DZ). A "+" indicates later than planned; "-" indicates earlier than planned.

- **Arrival Time (On)** is the difference in minutes between the estimated arrival times (using the ETMS-modeled ON time based on the filed flight plan [FZ]) and the actual arrival time (AZ). A "+" indicates later than planned; "-" indicates earlier than planned.

- **NRP** tells you how many flights within a flight group filed an NRP route.

- **Circular Holding** tells you how many flights within a flight group experienced circular holding (i.e., a circular holding pattern was detected in the actual flight track).

- **Changed ETMS Arrival Fix** indicates whether the flight was rerouted over a different arrival fix than what was filed.

Show Performance Metrics

There are several ways to select the Performance Metrics you wish to view in the Search Results Table.

1. Select **View > Performance Metrics** from the POET menu.
2. **Right-click** in the Search Results Table and select **Performance Metrics** from the resulting pop-up menu.
3. Click the **Metrics** button on the POET Toolbar

The **Performance Metrics** window appears. To view a specific performance metric in the Search Results Table, you must move the metric from the **Available** to the **Selected** column. You can move any metric from one column to the other in one of two ways: highlight the metrics one at a time and click the appropriate arrow button (< or >), or double-click an individual metric. Move *all* fields from one column to the other by clicking once on any metric in the appropriate column and click the << or >> button. Click **OK** to view the Selected metrics in the Search Results Table.

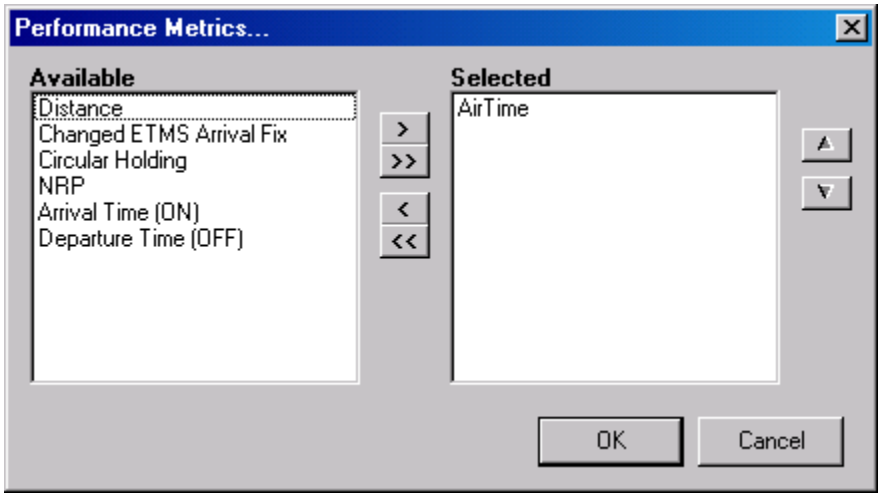


Figure 83: The Performance Metrics Window

The performance metrics appear in the Search Results Table in the same way they are ordered in the Selected column of the Performance Metrics window. To change the order in which the performance metrics appear in the Search Results Table, click on a metric in the Selected column of the Performance Metrics window. Use the up and down arrow buttons to move the selected metric up or down the list.

An Example: Let's look at Arrival Time (ON) in the Search Results Table. Open the Performance Metrics window (see Show Performance Metrics on page 76). Click **Arrival Time (ON)** in the **Available** column (Figure 84). Click the right arrow (**>**) button to move Arrival Time (ON) to the **Selected** column (Figure 85). Click **OK**. Your Search Results Table should look like Figure 86.

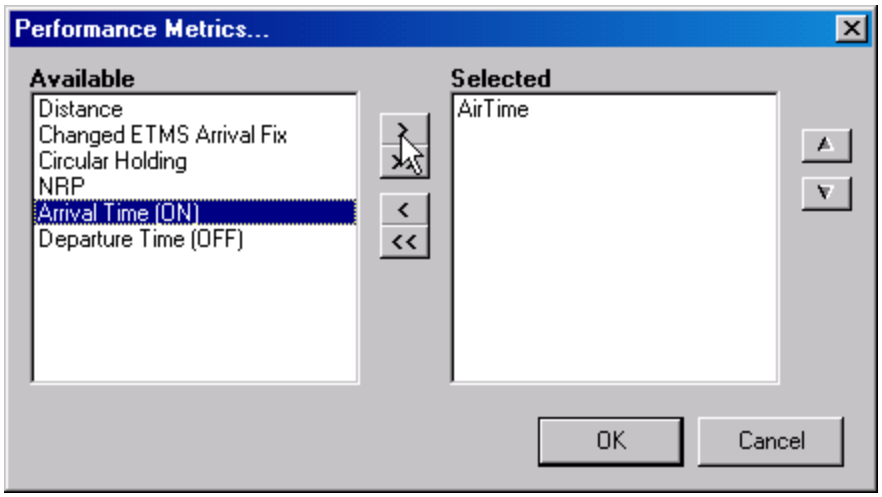


Figure 84: Select Arrival Time (ON) as a Performance Metric to Add

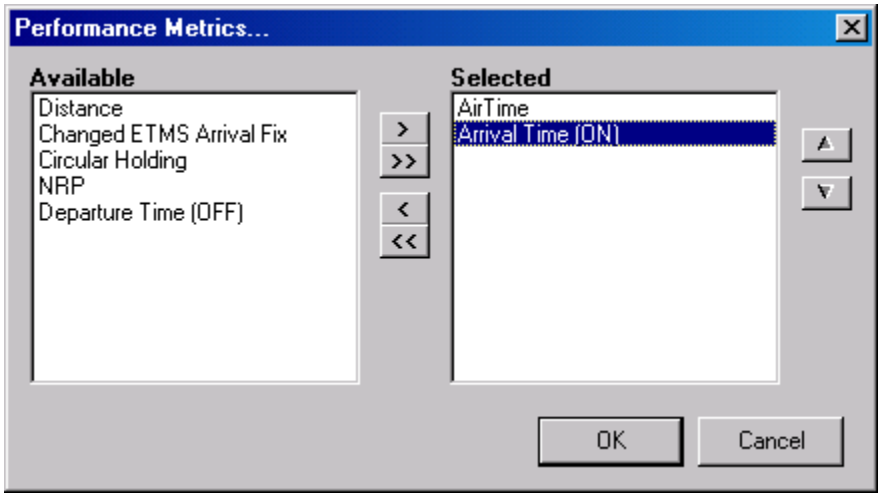


Figure 85: Arrival Time (ON) is in the Selected Column. Click OK to Add It.

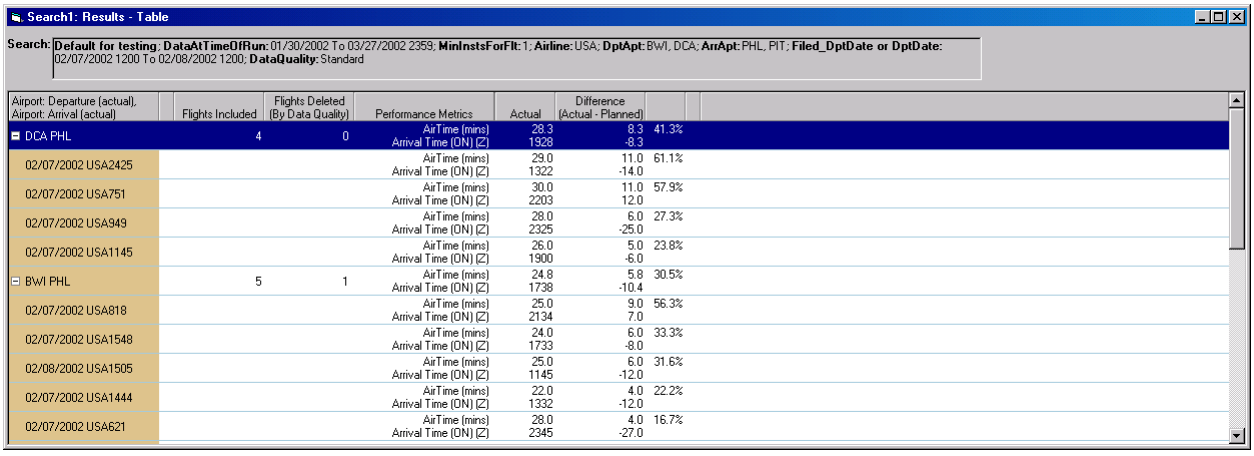


Figure 86: Arrival Time (ON) in the Search Results Table

Remove Performance Metrics

To remove performance metrics, bring up the Performance Metrics window again. To bring up the window, select **View** > **Performance Metrics**, right-click in the Search Results Table and select **Performance Metrics** from the pop-up menu, or click the **Metrics** button on the POET Toolbar.

In the Performance Metrics window, select the metric you want to remove and move it from the **Selected** to the **Available** column using the left arrow button (Figure 87).

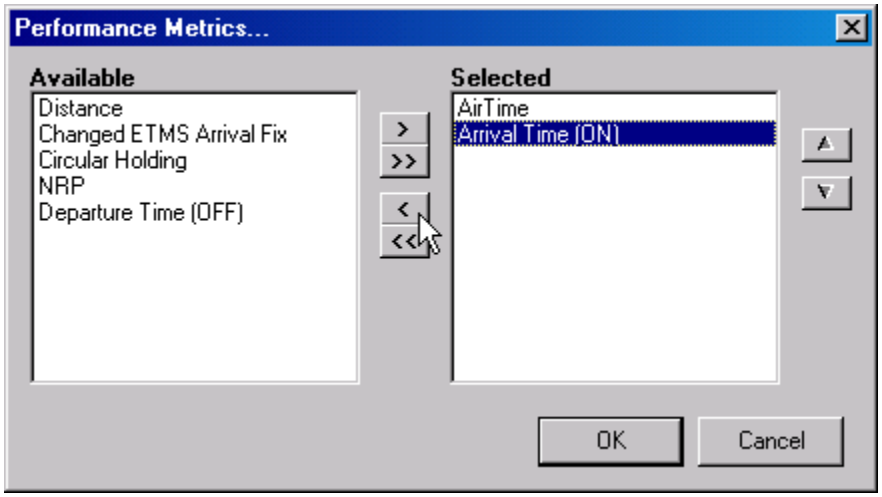


Figure 87: Remove Arrival Time (ON)

An Example: For our example, let's remove the performance metric Arrival Time (ON), which we had previously added to our Search Results Table. In the Performance Metrics window, click **Arrival Time (ON)** so that it is highlighted (Figure 87). Then click the left arrow (**>**) button to move Arrival Time (ON) so that it is in the Available column. Click **OK** to complete the action and your Search Results Table should only include Air Time as a performance metric.

Data Mining

As you get deeper into your analysis, you may want to further categorize flight groups according to their behavior in the NAS. In the Search Results Table, Data Mining allows you to do this by using a variety of categories and algorithms that further subdivide or combine particular flights or flight groups. The Data Mining options selected will be applied only to the flights or flight groups that are *highlighted* (selected) in the Search Results Table. The POET Data Miner is primarily made up of 2 functions: **Subgroup by** and **Combine Selected Into New Flight Group**.

To bring up the Data Mining window:

1. Select **View > Data Mining** from the POET Menu.

2. Click the **Data Mining** button on the POET Toolbar.

3. **Right-click** in the Search Results Table and select **Data Mining** from the pop-up menu.

4. Click **Ctrl+D** on your keyboard.

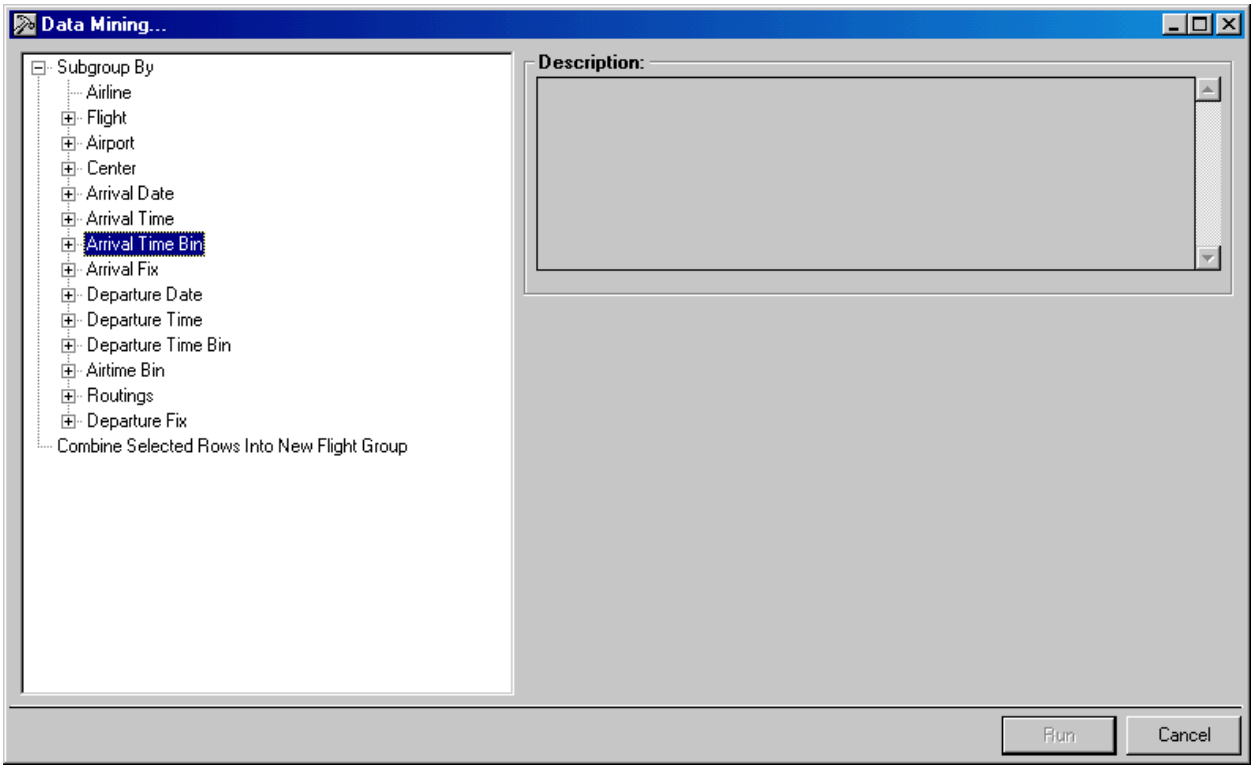


Figure 88: The Data Mining Window

Subgroup By

The POET Data Miner provides additional levels of flight grouping in the Search Results Table through the **Subgroup By** option. Subgrouping options only apply to flight *groups* in the Search Results Table, not individual flights.

Subgrouping Descriptions

You can subgroup according to a variety of data as well as use several POET algorithms for subgrouping. Many of the subgroup options are listed as a main heading, with additional options under the heading. For example, the subgroup option 'Airport' actually includes Departure (actual), Arrival (filed), and Arrival (actual). Any heading with additional options is displayed with a plus symbol (+) to the left of the heading. Click the plus symbol to view the options under that heading. Click an option to select it. The option you select will be highlighted. When the options under a heading are visible, the plus symbol changes to a minus symbol (-). Click the minus symbol to hide the options under a heading. You can subgroup your flights using the following criteria:

Apply a Subgrouping

1. Select one or more flight groups in the Search Table. Select a single flight group by clicking the flight group row. To select more than one flight group, ctrl+click several rows or click and drag your cursor across several flight group rows. Your selected flight groups should be highlighted.

2. Bring up the Data Mining Window. Select **View > Data Mining** from the main POET menu; **right-click** anywhere in the table and select **Data Mining** from the pop-up menu, click the **Data Mining** button on the POET Toolbar, or click **Ctrl+D** on your keyboard.

3. The Data Mining window opens. The left side of the Data Mining window lists the available data mining options. Scroll through the **Subgroup By** options. Click the Subgroup By option you want to use.

4. When you select a Subgroup By option, the right side of the Data Mining window will display a description of that option and list its editable parameters. Under Subgroup By, the only options that will have editable parameters are the subgrouping algorithms. To change a parameter, click the parameter row. Delete the current information and type in a new parameter.

5. Click **Run** to perform the Subgrouping. In the Search Results Table, you should see your flight group(s) subgrouped according to the option you ran. Note that you can always interrupt a data mining process by clicking the Escape key on your keyboard (Esc).

An Example: See which flights deviated from their planned route and which flights flew their planned route. To do this, we will apply a Data Miner to all the valid flights in the Search Results Table (those flights which are grayed out are considered "deleted."). Select all the flights by clicking and dragging across all the rows or clicking the first row of flights and then shift+clicking on the last row of flights. All your flights should be highlighted (Figure 89). Right-click anywhere in the Search Results Table and select **Data Mining** from the resulting Menu (**Error! Reference source not found.**). Select **Routings: Spatial Comparison of Filed to Flown Routes** from the Data Mining options (Figure 90). Click **OK** to perform the Data Mining. Your Search Results Table should now look like Figure 91. For each flight group in the Search Results Table (in this case, each flight group only consists of one flight), you can tell whether the filed route was similar to the route actually flown or a different route was taken.

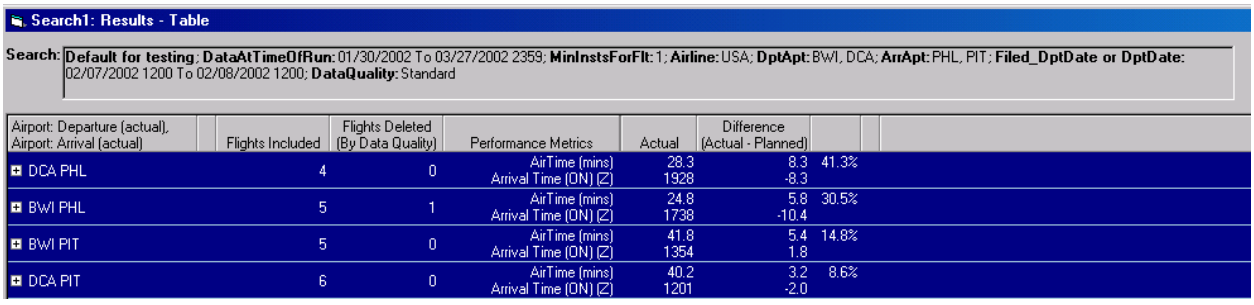


Figure 89: Select All Flights to Apply the Data Miner

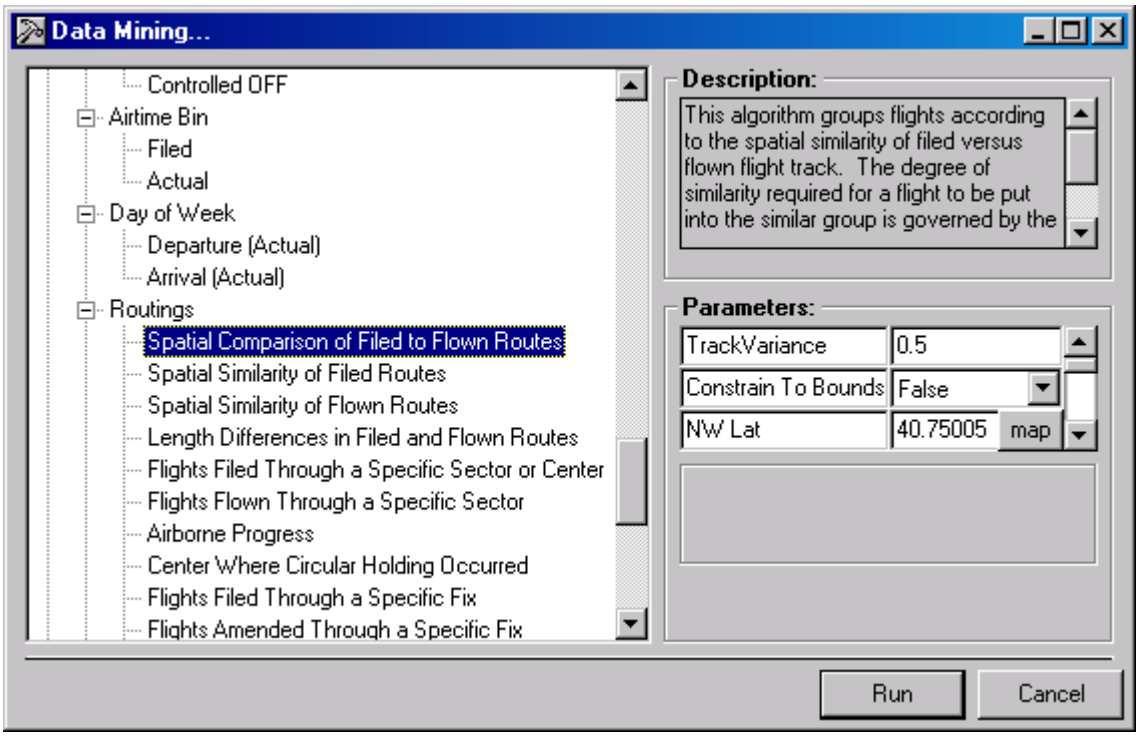
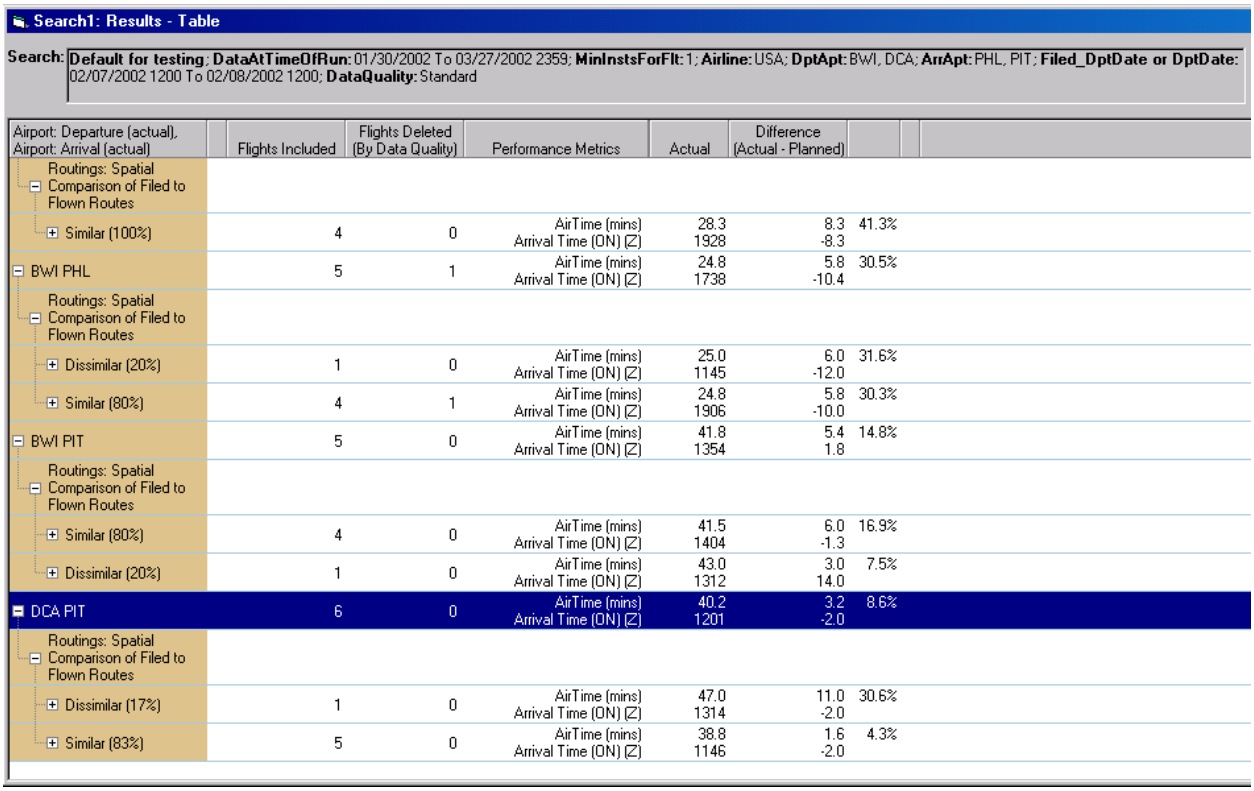


Figure 90: Select Your Data Miner



Airport: Departure (actual), Airport: Arrival (actual)	Flights Included	Flights Deleted (By Data Quality)	Performance Metrics	Actual	Difference (Actual - Planned)	
Routings: Spatial Comparison of Filed to Flown Routes						
Similar (100%)	4	0	AirTime (mins) Arrival Time (ON) (Z)	28.3 1928	8.3 -8.3	41.3%
BWI PHL	5	1	AirTime (mins) Arrival Time (ON) (Z)	24.8 1738	5.8 -10.4	30.5%
Routings: Spatial Comparison of Filed to Flown Routes						
Dissimilar (20%)	1	0	AirTime (mins) Arrival Time (ON) (Z)	25.0 1145	6.0 -12.0	31.6%
Similar (80%)	4	1	AirTime (mins) Arrival Time (ON) (Z)	24.8 1906	5.8 -10.0	30.3%
BWI PIT	5	0	AirTime (mins) Arrival Time (ON) (Z)	41.8 1354	5.4 1.8	14.8%
Routings: Spatial Comparison of Filed to Flown Routes						
Similar (80%)	4	0	AirTime (mins) Arrival Time (ON) (Z)	41.5 1404	6.0 -1.3	16.9%
Dissimilar (20%)	1	0	AirTime (mins) Arrival Time (ON) (Z)	43.0 1312	3.0 14.0	7.5%
DCA PIT	6	0	AirTime (mins) Arrival Time (ON) (Z)	40.2 1201	3.2 -2.0	8.6%
Routings: Spatial Comparison of Filed to Flown Routes						
Dissimilar (17%)	1	0	AirTime (mins) Arrival Time (ON) (Z)	47.0 1314	11.0 -2.0	30.6%
Similar (83%)	5	0	AirTime (mins) Arrival Time (ON) (Z)	38.8 1146	1.6 -2.0	4.3%

Figure 91: Data Mining Results

Remove a Subgrouping

To remove a subgrouping, click the row that lists the subgrouping option (Figure 92). You should find the name of the subgrouping under the top-level flight group to which you applied the subgrouping. Once you select the subgrouping and it is highlighted in the table, click **Edit > Remove Subgroupings** (Figure 93).

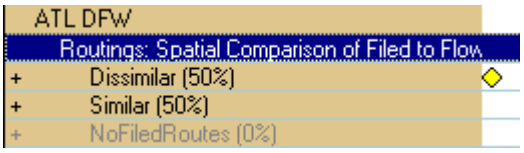


Figure 92: Click on the Row with the Subgrouping Name

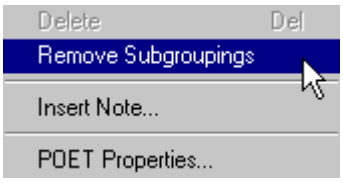


Figure 93: Edit > Remove Subgroupings

Combine

There may be certain situations when you want to create a new flight group consisting of flights or flight groups already listed in the table. In this case, the Data Mining's **Combine** function allows you to create your own flight groups by combining several individual flights or flight groups of your choosing.

Apply the Combine Function

1. Select several individual flights or flight groups in the Search Results Table. To do this either click and drag your cursor across several flight or flight group rows or ctrl-click the desired flights or groups. The flights and/or flight groups you select should be highlighted.

2. Select **View > Data Mining** or **right-click** anywhere in the Search Results Table and select **Data Mining** from the pop-up menu. The Data Mining window pops up. The left side of the Data Mining window lists all the available data mining options. Scroll through the options until you see **Combine Selected into New Flight Group**.

3. **SHORTCUT ALERT!** Once you select the flights or flight groups to combine, click 

on the POET Toolbar to create a new flight group.

4. When you select the Combine option from the Data Mining window or the POET Toolbar, you will be prompted to enter a name for your new flight group. Delete the default name, 'Combined Flights,' and type in a new name.

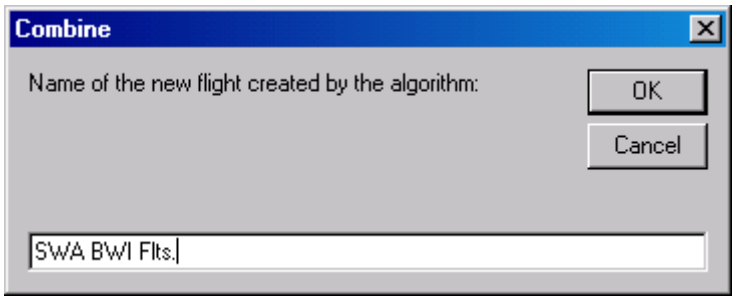


Figure 94: Pop-Up Window That Appears After Selecting Combine from the POET Toolbar

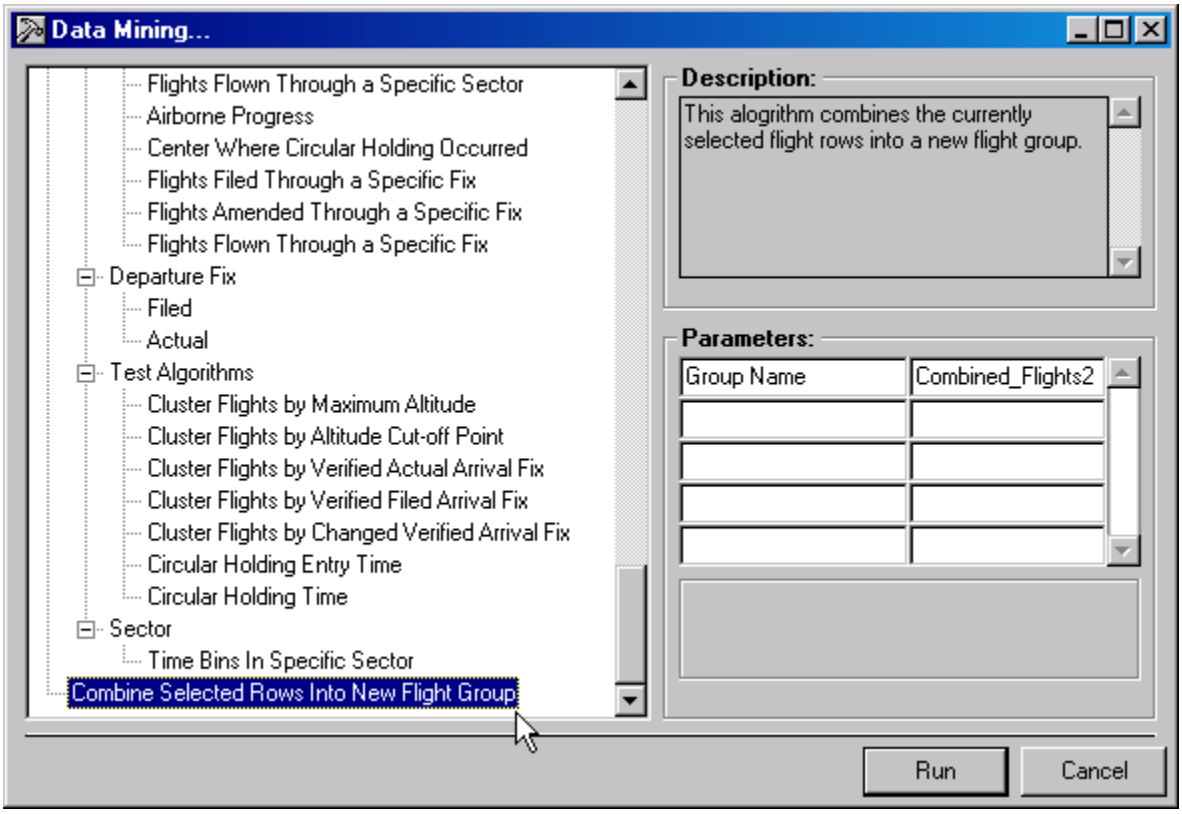


Figure 95: Using the Data Mining Window to Create a New Flight Group

5. Once you type in a group name, click **Run** in the Data Mining window. You should see your new flight group at the top of the Search Results Table. Note that you can always interrupt a data mining process by clicking the Escape key on your keyboard (Esc).

Export the Table

You can export the Search Results Table to use in another program. POET gives you two options for exporting the table, both of which can be accessed from the POET File menu.

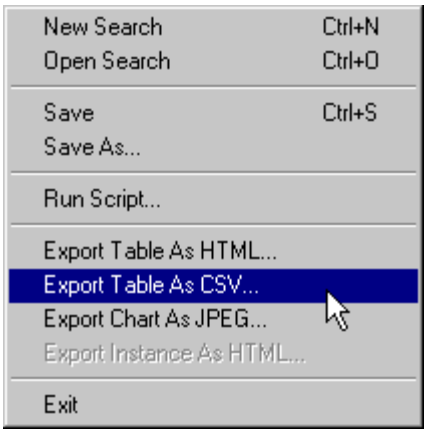


Figure 96: POET File Menu

1. **File > Export Table As HTML** will export your table in HTML format. Saving the Search Results Table in HTML allows you to view the table in an Internet browser.

2. **File > Export Table As CSV** will save your table as comma separated values. This is a good option when you want to view the table in Microsoft Excel or a similar spreadsheet program.

Whichever way you decide to export your table, you should be prompted to enter a file name and location. POET will then save the file to the directory you specify, where you can access it for later use.

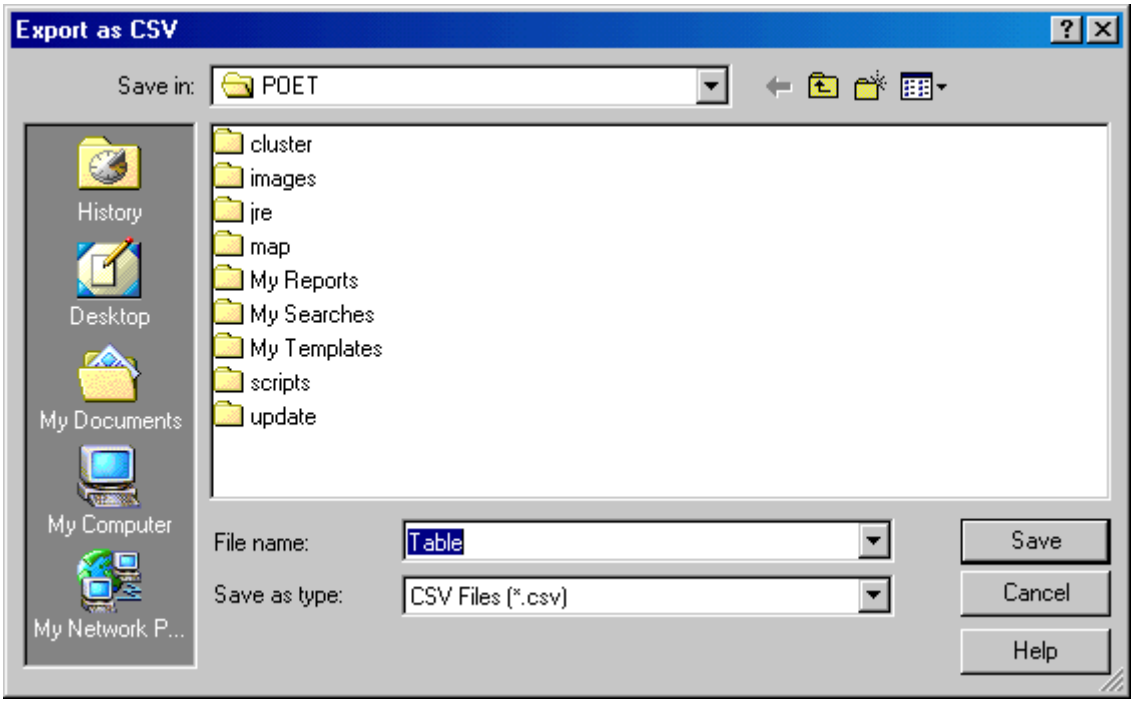


Figure 97: Export as CSV - Windows NT Prompt to Enter File Name and Location

Analysis Using the Charts

The charts shown as part of the Search Results Window present performance parameter data for each flight group in a graphical form to help you visualize relationships between parameters as well as to detect unusual values. In the Search Results display you can view a **Scatter Chart** , **Bar Chart**, or **Special Chart** for each flight or flight group.

Manipulating the Charts

The charts can be customized in a variety of ways. While some customization is specific to each chart type, others are common to all the charts. In any of the charts you can zoom in on or pan across the data, identify outlying data points and delete flights from your analysis, and access detailed flight information.

Zoom In/Out On Information

You can use the zoom function to focus on specific data within the Charts.

To **Zoom In** on a cluster of data in the chart, click and drag your cursor to form a square around the area you want to see. Start your square above and to the left of the area, dragging down and to the right.

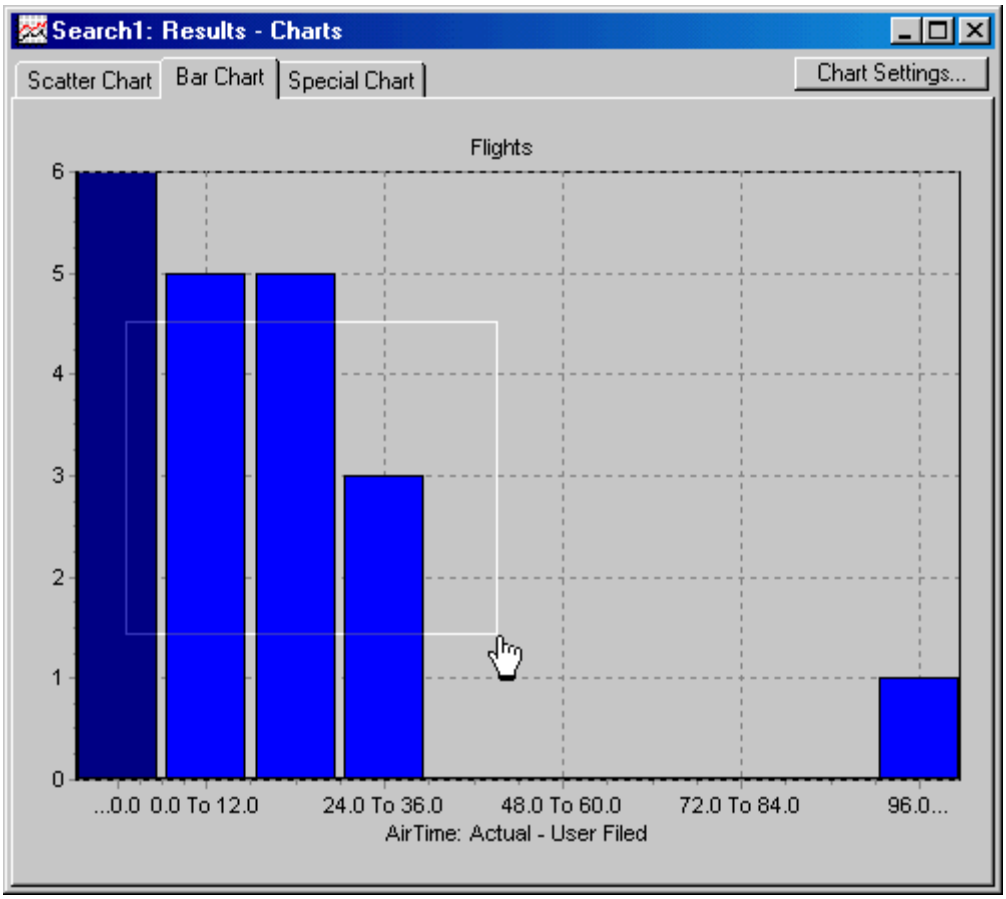


Figure 98: Zoom In On An Area (Bar Chart)

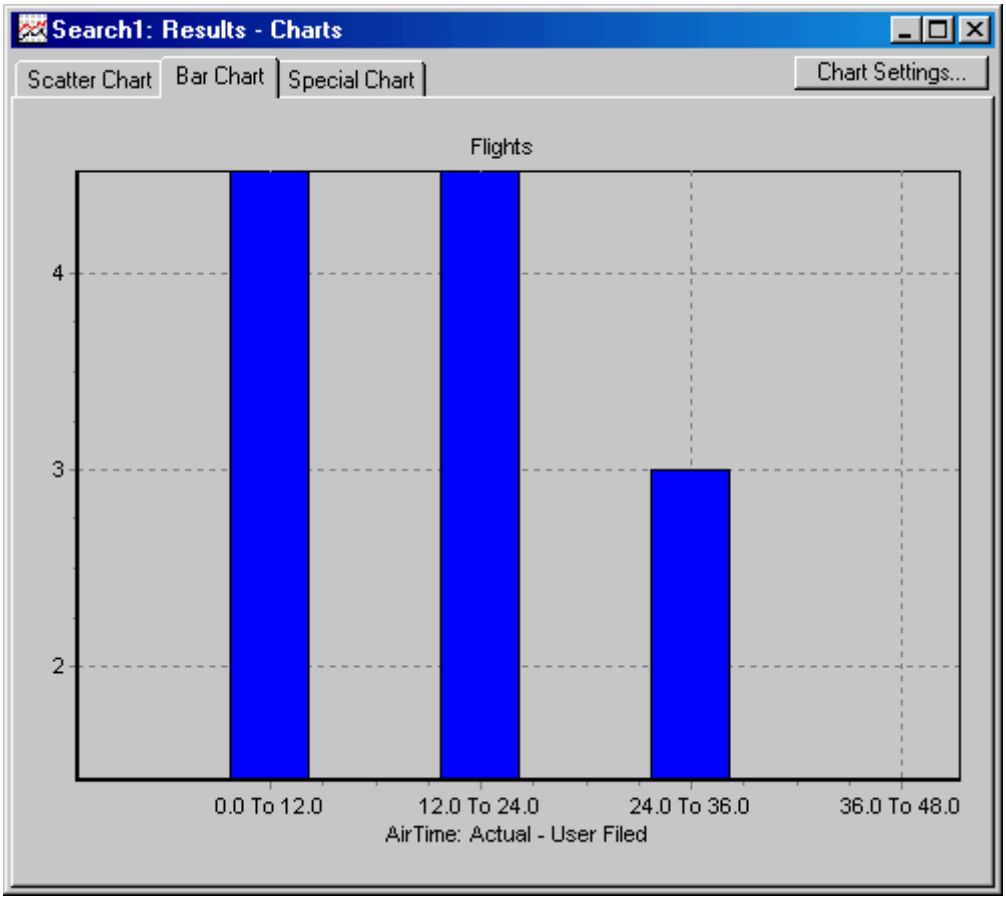


Figure 99: Bar Chart After Zooming

To **Reset the Zoom** simply reverse your actions. Click and drag your cursor anywhere in the chart, dragging up and to the left. The size of the square that your cursor creates is not important when you reset the chart. Any reverse zoom will reset the chart to its original display.

Pan Across the Charts

You can reposition the Chart display to suit your viewing needs. For example, if you want to center specific flight information, you can move the area more towards the center of the Chart. When you reposition the bars, the X and Y-axes move accordingly. To move the Chart display, use POET's pan function. **Right-click** anywhere in the Bar Chart and **drag** your cursor to move the bars to the desired position.

Delete Flights with Bad or Outlying Data

You can use the charts to determine outlying data points or bad data. When you view flight data on the charts, data is often clustered in a single area. Those flights with bad data or outlying data points will be significantly outside of this area. You can remove these flights from your analysis using the charts. When you remove a flight in the charts, data on both the chart and the Search Results Table will be grayed out. DO NOT use the Edit menu to delete your flights in the charts, as this will delete all the flights in the

chart from your analysis. On the Scatter chart, click on the corresponding dot in the Scatter Chart and press **Delete** on your keyboard.

Reinstate Flights Into Your Analysis

To reinstate the flight into your analysis, click the flight's row in the Search Results Table (it should be grayed out) and press Delete on your keyboard.

Access Detailed Flight Information

Using the charts, you can view the Flight Window, which contains detailed information for a single flight. To get to the Flight Window, double-click on any dot, bar, or line that represents a single flight on your chart. The Search Results display will be replaced by the Flight Window (see page 70).

From a bar chart, you can access both Flight Lists and detailed flight information in the Flight Window.

A Flight List is the list of actual flights contained in a single bar on the Bar Chart. When more than one flight makes up a single bar in the Bar Chart, double-click on that bar to bring up the Flight List (Figure 100).

To view details for a single flight in the Flight Window, you can do one of two things:

1. Double-click on any bar in the bar chart that represents only a single flight.

2. Bring up a Flight List by double-clicking a bar in the Bar Chart that is made up of more than one flight (Figure 100). In the Flight List, double-click on any of the flights listed to bring up the Flight Window for that flight.

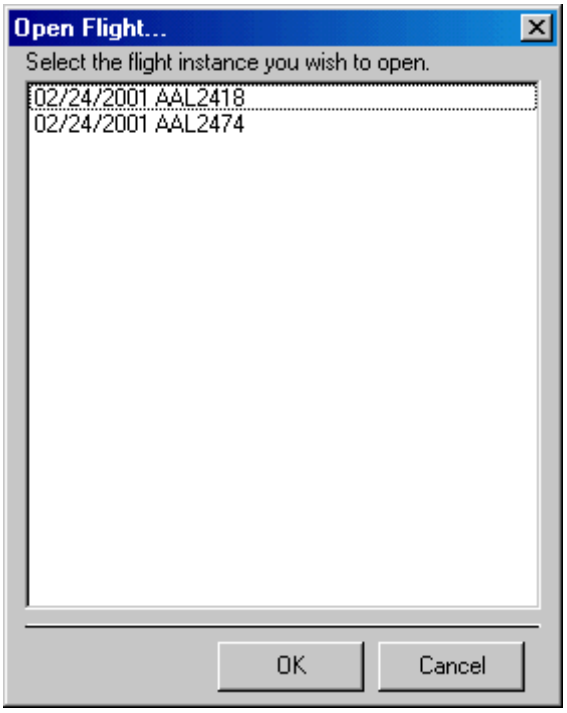


Figure 100: Flight List from the Bar Chart

The Search Results display will be replaced by the Flight Window (see page 70).

Scatter Chart

The Scatter Chart is the first tab displayed in the Search Results Charts Window.

To use the Scatter Chart, select one or more flight groups or individual flights in the Search Results Table. To select multiple flights or flight groups you can click and drag your cursor across a range of flights/flight groups or ctrl+click the desired flights/flight groups. The flight(s) or flight group(s) you select should be highlighted.

The Scatter Chart immediately updates its display to show data for the selected flight(s) or flight group(s). If you select another set of flights or flight groups, the Scatter Chart will again change to display the new data. Each dot in the Scatter Chart represents a single flight.

An Example: In your Search Results Table, click on the first row of flights. Note that the Scatter Chart changes its display immediately. Click and drag over several individual flights Search Results Table. The Scatter Chart is immediately updated and shows several differently colored dots (one for each flight).

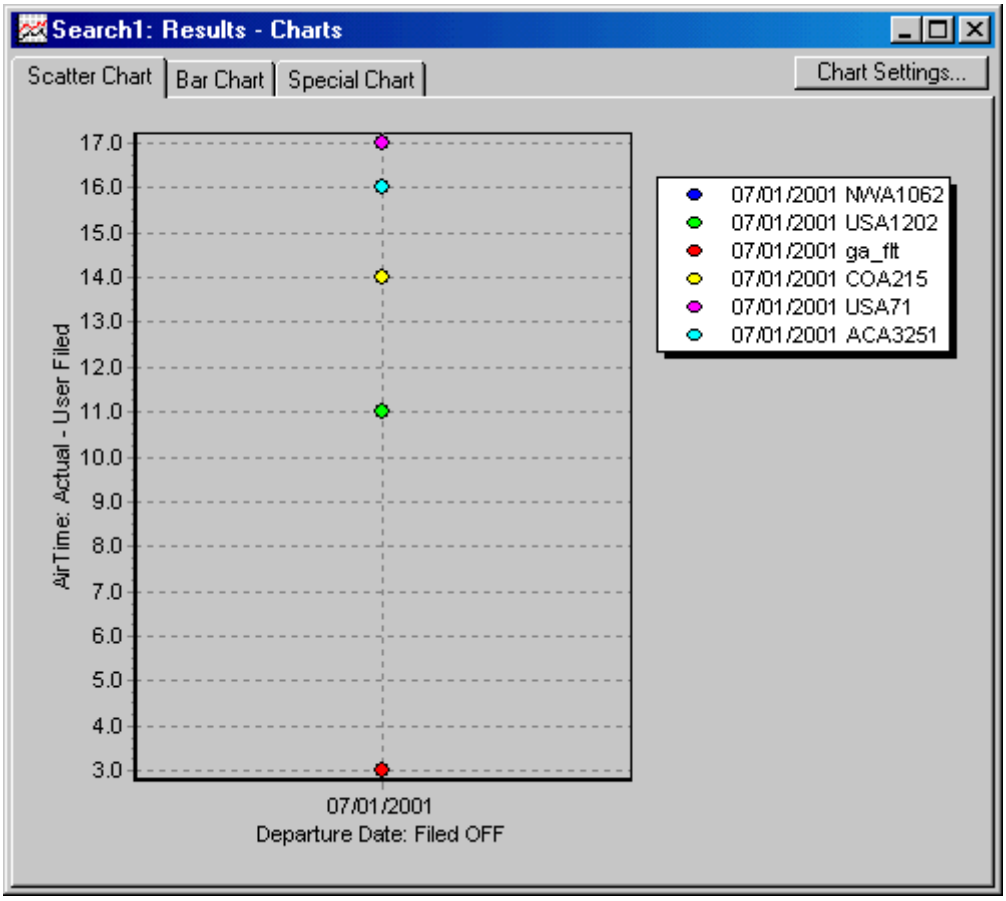


Figure 101: Scatter Chart With Multiple Flights

Scatter Chart Coloring

The dots in the scatter chart are colored according to whether you select flights or flight groups to display.

When you select a **single flight**, the default dot color is red. Only a single dot appears on the Scatter Chart and there is no legend in the Scatter Chart window.

When you select **multiple flights**, each dot on the Scatter Chart is a different color. A legend in the Scatter Chart displays the dot color next to its associated flight.

When you select a **single flight group**, all the dots are the same color. No legend appears in the Scatter Chart window.

When you select **multiple flight groups**, different color dots are used for each flight group. A legend appears in the Scatter Chart and displays the dot color next to its associated flight group (see Figure 101).

Note that when you use the Routes window to apply **Rainbow** coloring to flight tracks on the map, your charts will utilize the same coloring scheme for flights that correspond to those on the map. For more information on Rainbow coloring, see the section titled "Customize Flight Tracks" on page 104.

Scatter Chart Settings

Different performance metrics are displayed along the Scatter Chart's X and Y-axes. You can change the performance metrics displayed to meet your analysis needs.

1. On the Scatter Chart click the **Chart Settings** button.

2. The Chart Settings window appears.

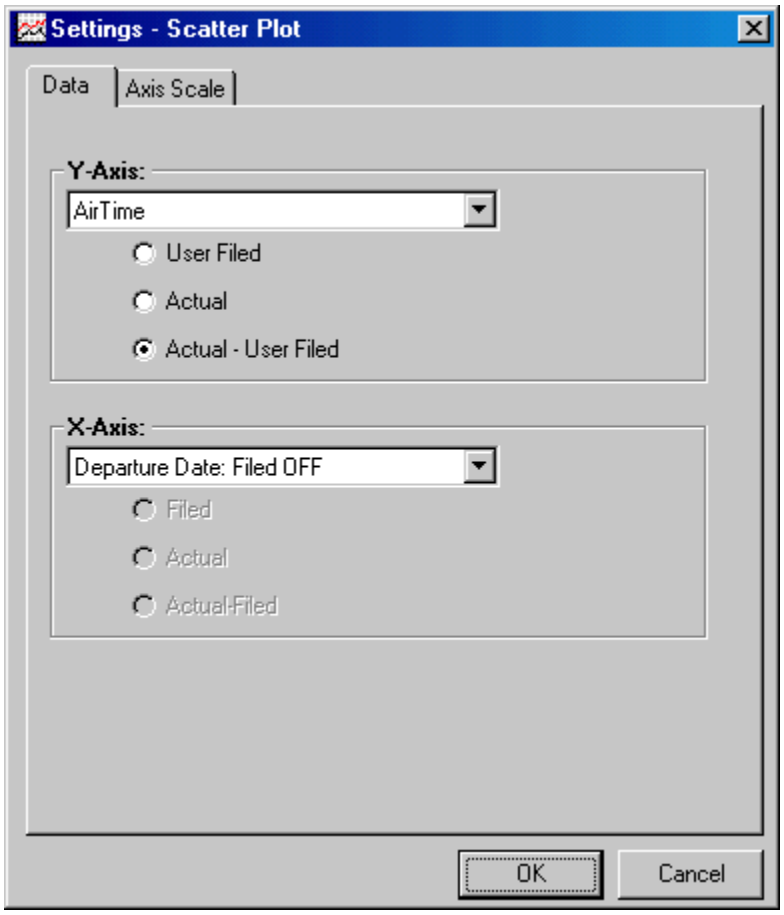


Figure 102: Chart Settings Window

Data

The Chart Settings window has two tabs: Data and Axis Scale. Using the Data tab, you can change the settings for both the X and Y-axes.

Use the pull-down menu under the Y-Axis or X-Axis field to view the available performance metrics. Click the metric you want and it should appear in the field. Under the pull-down menu, click the appropriate radio button to display the **Filed**, **Actual**, or **Difference (Actual - Filed)** data for the selected metric.

Once you have selected which performance metrics to plot in the X and Y-axes for your chart, click **OK** at the bottom right of the Chart Settings window. If you made changes in the Chart Settings window but do not want the Scatter Chart to reflect those changes, click **Cancel**.

Axis Scale

Using the Axis Scale tab, you can manipulate the chart scale. This function may be useful when you are building a report and want to maintain the same scale throughout all your charts. By default, the scale is set at automatic. To replace the default setting, uncheck the "Automatic" box under the Y Axis or X Axis field. The Minimum and Maximum fields immediately become editable. You can see in Figure 103 that the user is about to set a new value for the Minimum setting under the Y Axis.

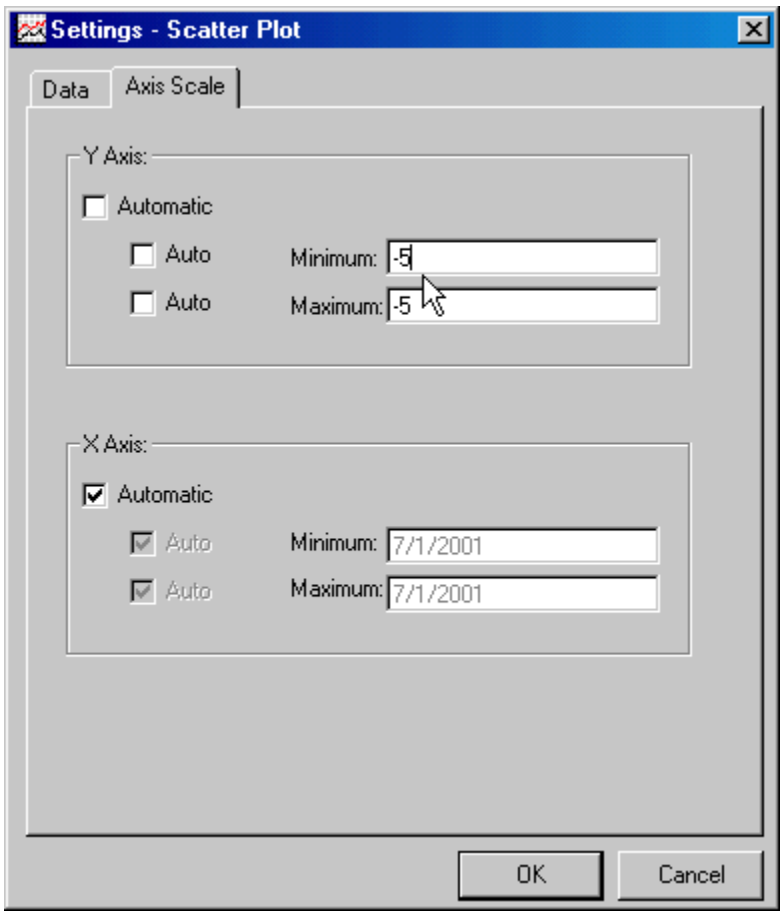


Figure 103: Scatter Chart Settings - Axis Scale Tab

An Example: Let's see if Arrival Time (ON) is related to Distance traveled. Select several flight groups in your Search Results Table. Pull up the Chart Settings window by clicking **Chart Settings** on the Scatter Chart. Click the Data tab. Under the Y-Axis, select **Arrival Time (ON)** and click the radio button that says **Actual-Filed** (Figure 104). Under the X-Axis, select **Distance** (Figure 105) and click the radio button that says **Actual**. Click **OK** to make the changes to your chart. Your chart should be similar to Figure 106. The example in our figures suggests that further analysis could show that short-haul flights tend to arrive early on good weather days.

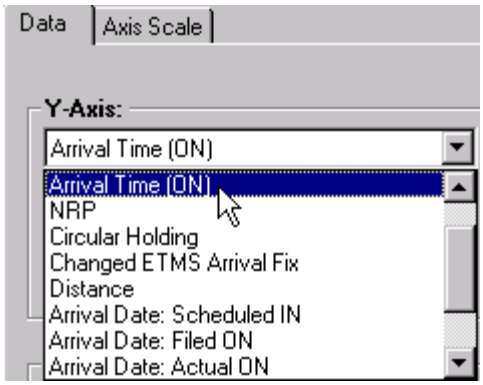


Figure 104: Select Arrival Time (ON) in the Y-Axis Options

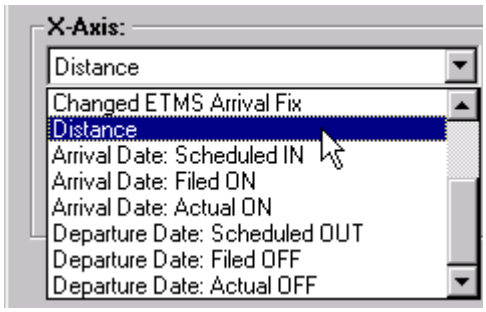


Figure 105: Select Distance Under X-Axis Options

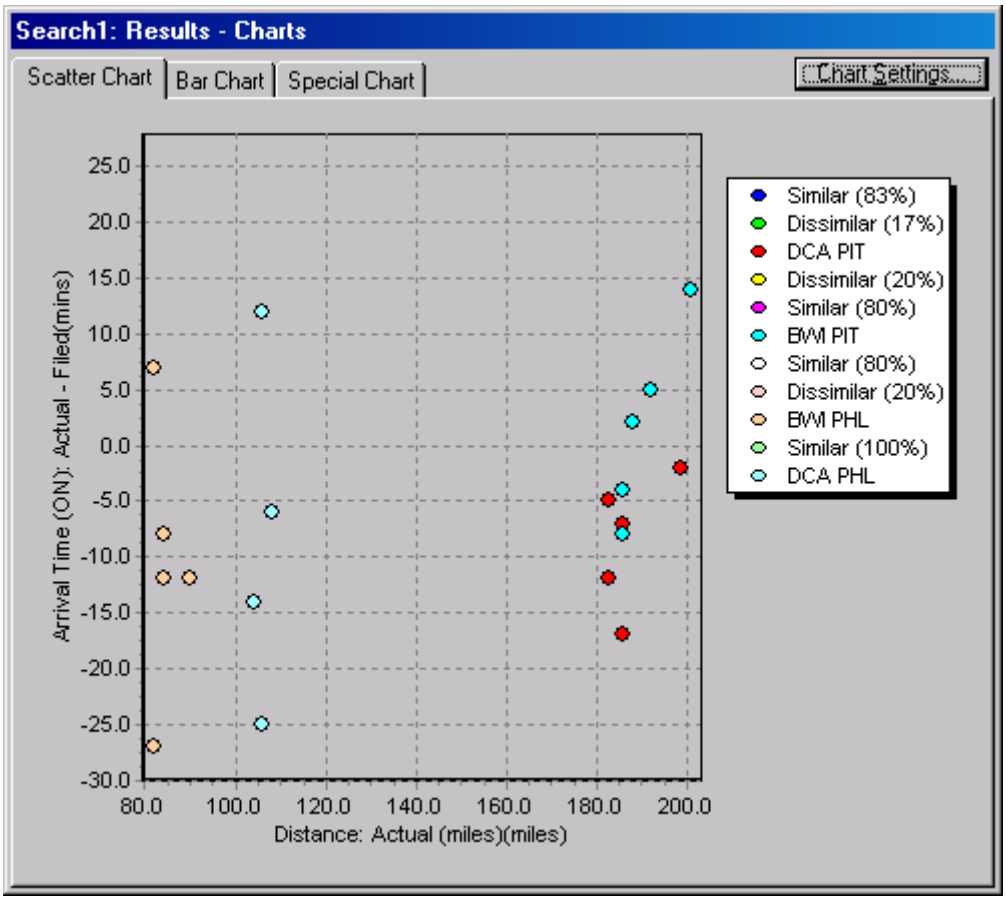


Figure 106: Scatter Chart With Changed Arrival Fix as a Function of Arrival Time

Bar Chart

The Bar Chart is a histogram of all of the flights in a particular flight group. To view a Bar Chart, click the **Bar Chart** tab in the Search Results: Charts window. The Bar Chart should appear (See Figure 107).

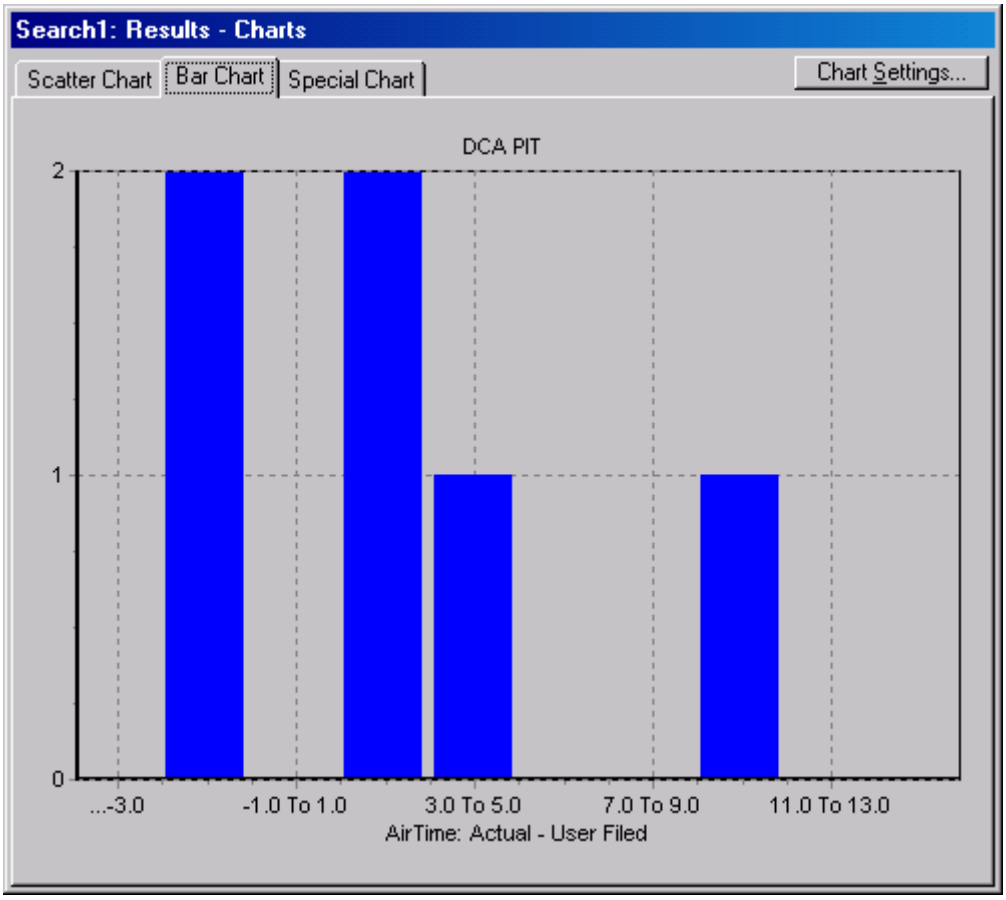


Figure 107: Bar Chart

For the Bar Chart, the Y-axis is always the number of flights whose value for the selected performance metric falls within the specified bins along the X-axis. Any of the available performance metrics can be plotted on the Bar Chart. Currently, the available metrics are **User Filed**, **Actual** or **Difference (Actual - User Filed)** for: Departure Time (OFF), Air Time, Arrival Time (ON), NRP, Circular Holding, Changed Arrival Fix, and Distance.

Change the Bar Chart Settings

Different performance metrics are displayed along the Bar Chart's Y-axis. You can change the performance metrics, bin number, and bin size to meet your analysis needs. You can also change the scale of the chart. On the Bar Chart click the **Chart Settings** button. The Chart Settings window appears with

two tabs: Data and Axis Scale. To change the performance metrics displayed on the chart, click the Data tab. The following fields are editable under the Data tab:

- **Data:** Use the pull-down menu under the **Data** field to view the available performance metrics. Click the metric you want and it should appear in the field. Under the pull-down menu, click the appropriate radio button to display the **User Filed**, **Actual**, or **Difference (Actual - User Filed)** data for the selected performance metric.

- **Bin Settings:** In the **Bin Settings** field, type in the **Number of Bins** you want to appear along the X-axis. The default is 10. Next to **Bin Sizes**, use the pull-down menu to select **Automatic** or **Manual**. If you select Automatic, POET will decide the start value for the bins and the bin size for the Bar Chart based on the flight data displayed. If you select Manual, you can decide where to place the bins along the X-axis. When you select manual, you must enter values into the fields at the bottom of the Chart Settings window: **Bin Size** and **Start Value**.

- **Plot Rows As Separate Series:** By default this option is checked, which means that the bar chart will use differently colored bars to display information for individual flight rows in the Search Results Table (Figure 108). If you uncheck this option, POET displays one set of bars in a single color to create a histogram for the entire flight population (Figure 109).

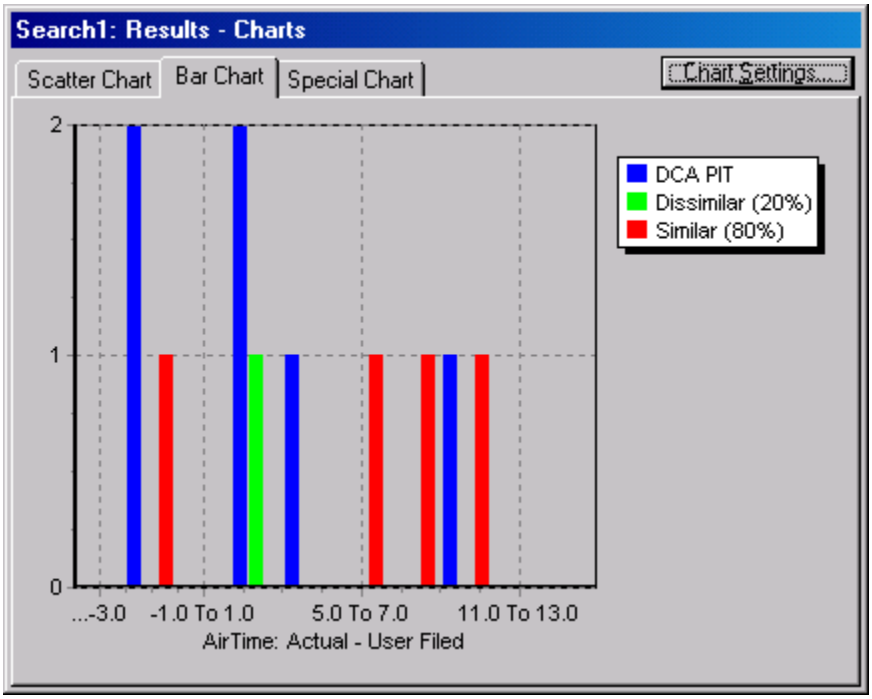


Figure 108: Bar Chart Using Plot Selected Rows As Separate Series

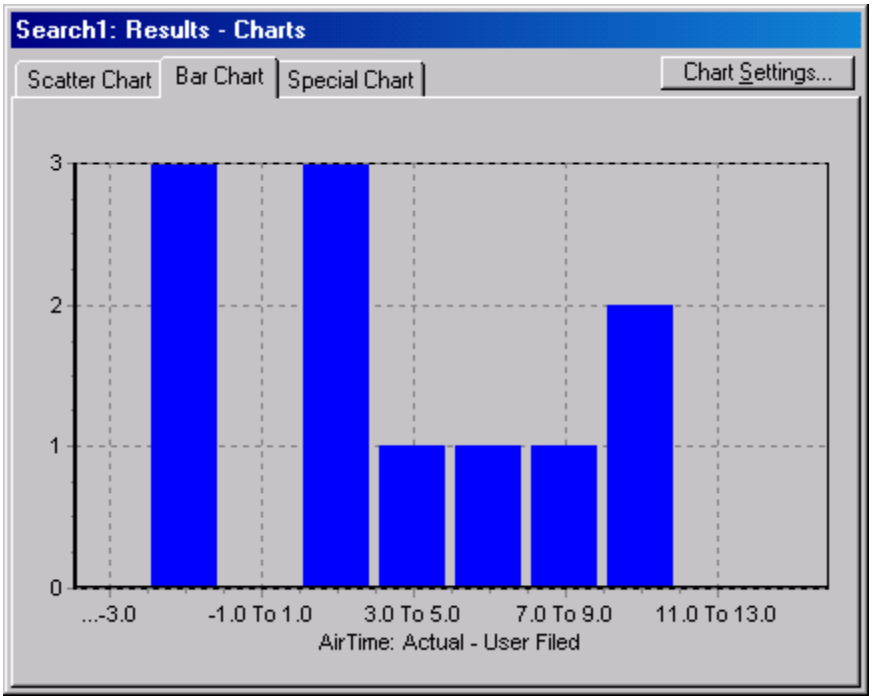


Figure 109: Bar Chart That Does NOT Plot Selected Rows as Separate series

To change the scale of your chart, click the Axis Scale tab. You can see in that only the Y-axis is editable. The scale is set according to default values. To change these values, uncheck the "Automatic" box under Y-axis. Enter your own values in the Minimum and Maximum fields.

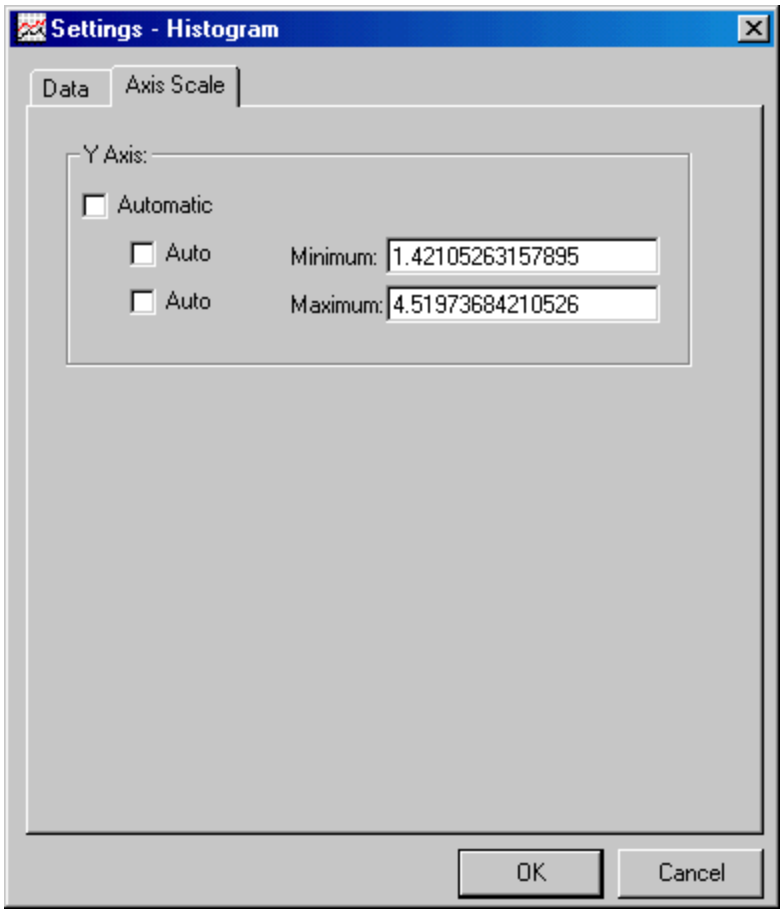


Figure 110: Bar Chart Settings - Axis Scale Tab

Once you make changes to the settings, click **OK** at the bottom right of the Chart Settings window. If you made changes in the Chart Settings window but do not want the Bar Chart to reflect those changes, click **Cancel**.

An Example: Let's look at flight arrival times in the Bar Chart. In the Bar Chart, click on the Chart Settings Button. In the Chart Settings window, select **Arrival Time (ON)** as your X-Axis metric. We have also decreased the number of bins by entering **'5'** next to the Bins field (Figure 111). Select a few flights in the Search Results Table. Your Bar Chart should look similar to Figure 112.

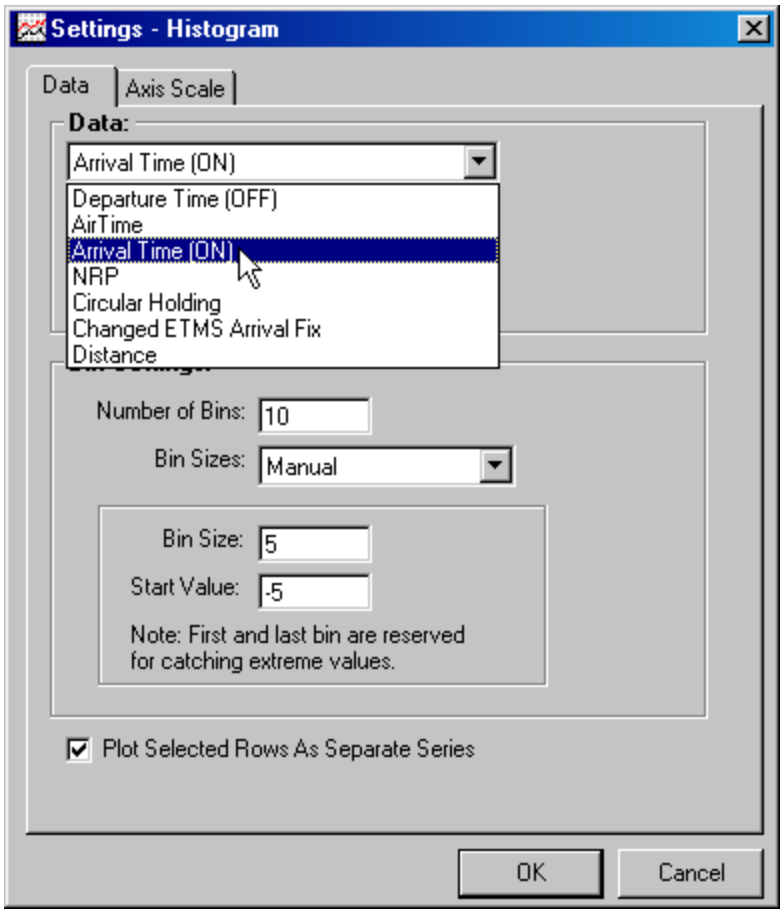


Figure 111: Changing the Bar Chart Settings

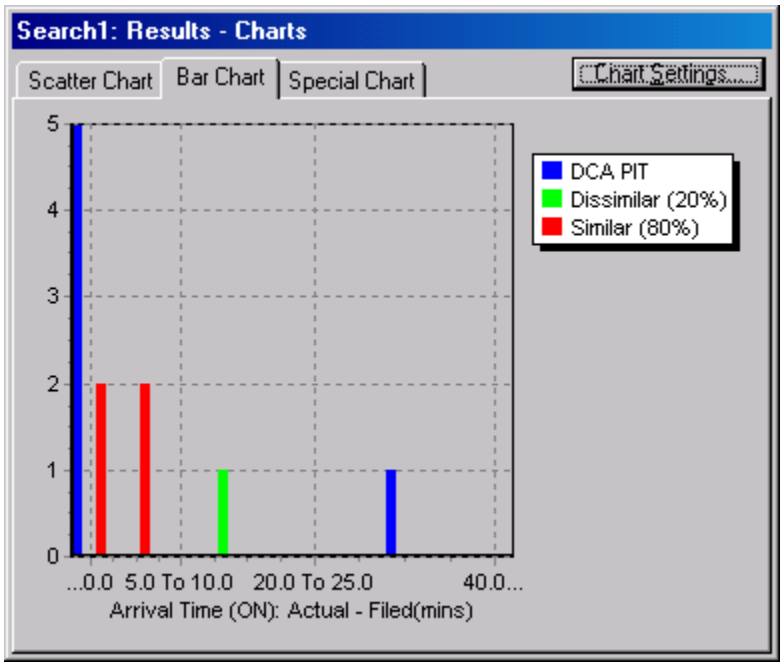


Figure 112: Bar Chart With Changed Settings

Special Charts

Special Charts provide specific analysis capabilities. Unlike the Scatter and Bar Charts, where you can change the type of analysis presented, Special Charts are pre-defined and perform a range of comparative analyses. Note that some of the Special Chart analyses require you to enter analysis parameters.

To access the Special Charts, click the **Special Charts** tab in the Search Results - Charts window. The Special Chart will appear, but will be empty until you choose which Special Chart to display.

Chart Settings

To access a Special Chart, you must choose a chart type from Chart Settings. Once in the Special Charts tab, click the **Chart Settings** button to see the chart types available. The Chart Settings window opens. Click a chart type to display. POET may take a moment to load the necessary data. Several chart types are available in POET 2.0, including comparisons of Percent Changed Arrival Fix vs. Filed Arrival Fix, Off Time Delay vs. Filed Departure Fix, and TZ ETA Error. Chart availability may change with future versions of POET.

Using the Chart Settings window, you select the chart you wish to view and set the scale for the chart. The Chart Settings window has two tabs: Data and Axis Scale. Using the Data tab, select a chart type from the pull-down menu. A description of the chart should appear in the Data tab once you select a chart (Figure 113).

In the Axis Scale tab, uncheck the "Automatic" box under either the Y or X-axis. The Minimum and Maximum fields under each axis immediately become editable. You can enter new values to scale the chart to your specifications (Figure 114).

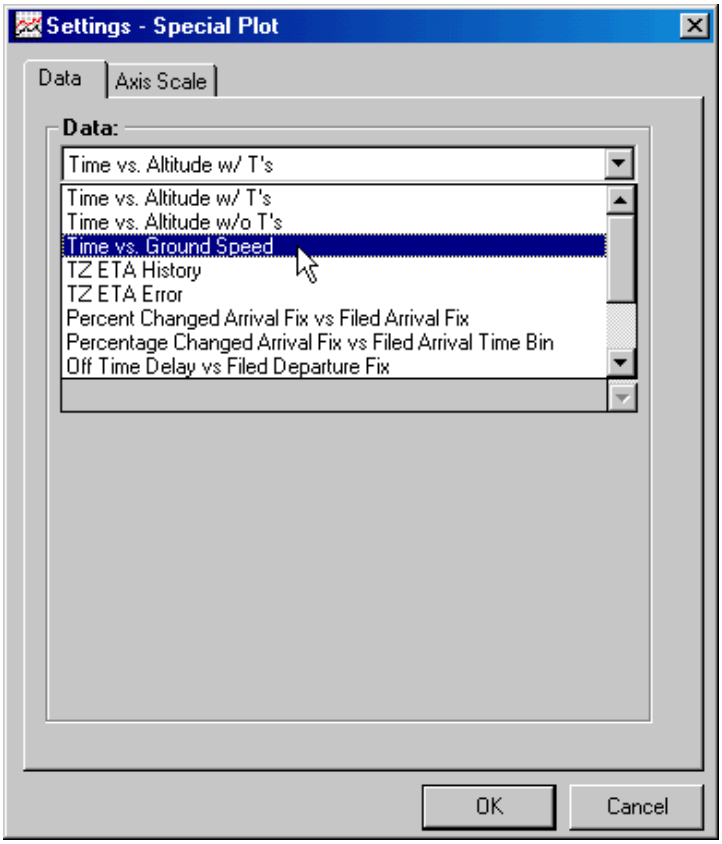


Figure 113: Special Charts - Data Tab in Chart Settings

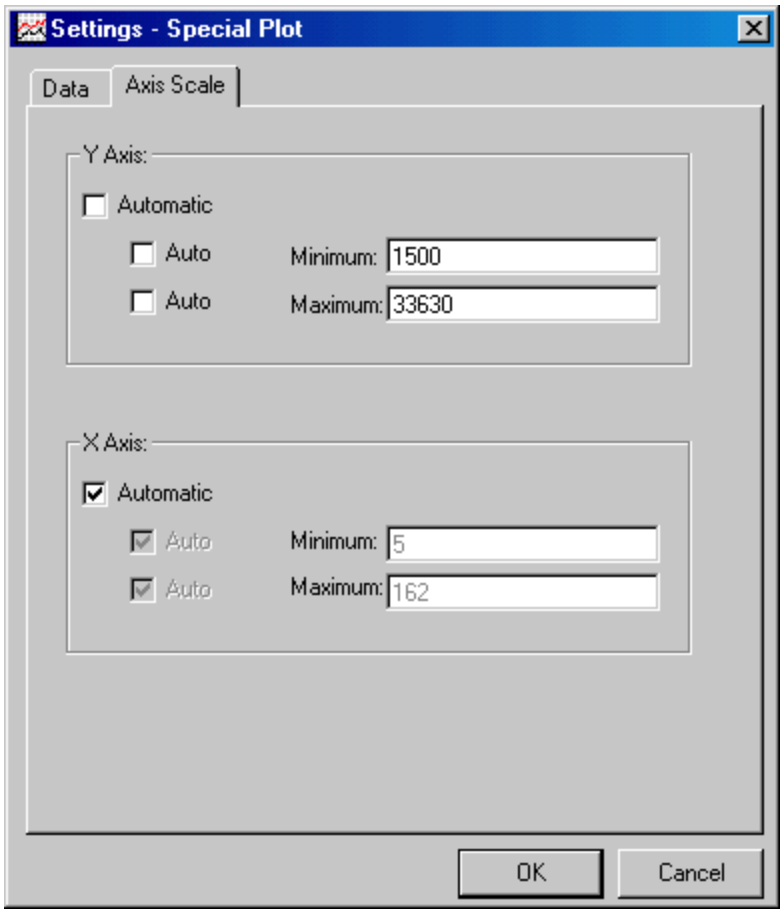


Figure 114: Special Chart - Axis Scale Tab in Chart Settings

Export Chart Data

After you customize a Chart, you may want to save the image for later analysis or reporting. You can do this by exporting the chart data. To export data from a Chart, select **File > Export Chart As JPEG** while in the main Search Results Window (see Figure 115). You will then be prompted for a file name and location to save the chart as a JPEG image.

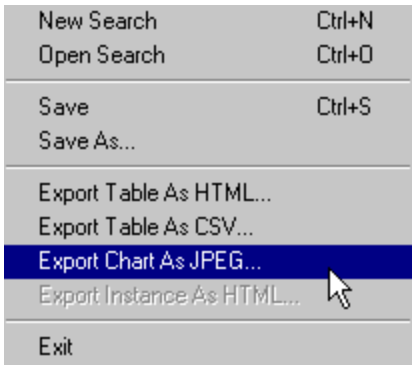


Figure 115: The File Menu: Export Chart As JPEG

For information on adding a picture of a chart to a POET Report, see Add a Chart on page 133.

Analysis Using the Map

The Search Results Map is a useful tool for analysis because it allows you to see flight track information in a geographical context with or without overlying NAS configuration data. When the Search Results display opens, the Search Results Map window loads automatically.

Note that the POET Search Results Map has its own menu. When this chapter talks about options in the **View and **File** menu, it will specify whether the option is available from the POET Map menu or POET main menu.

View Flight Information on the Map

The Search Results Map is blank when it first appears in your Search Results Window. A flight track will not appear on the Map until you open flight groups to list individual flights in the Search Results Table by double-clicking on a particular row. You can view single or multiple flight tracks on the Map using the following procedures:

- Open a flight group in the Search Results table by double-clicking its row. Flight tracks for all the flights in the group appear on the map. The default color for the Filed Route is Green, while the Actual Route is Black.

- Highlight several flights to view in the Search Results table by clicking on a flight and dragging up or down in the list to highlight surrounding flights or ctrl-clicking several flights.

- Right-click on a flight row. Select **Routes** from the menu that pops up. From the Routes window, click to check whether you want POET to **Show Filed Routes** or **Show Flown Routes**. Check both boxes to see both sets of routes. This forces POET to display routes without having to expand the table.

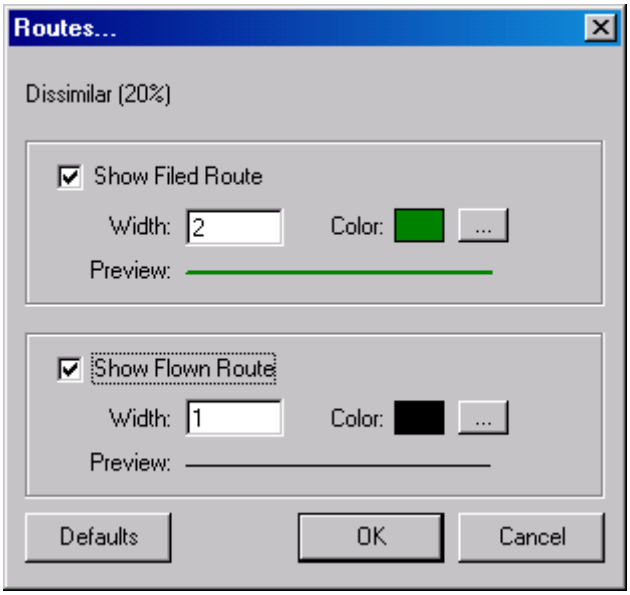


Figure 116: Routes Window

An Example: We double-clicked on the first row of flight groups in the Search Results Table until we drilled down to a single flight. In this particular flight group, only one flight was included. The POET Map automatically updates to show the Filed and Flown Routes for that flight. (Figure 117).

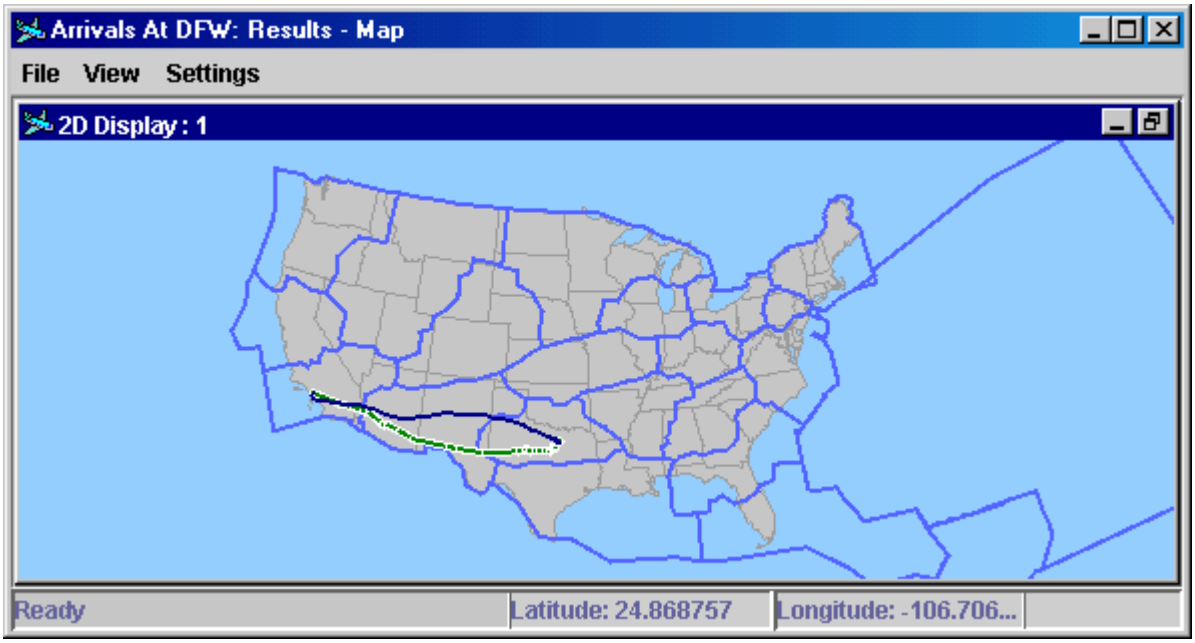


Figure 117: POET Map

Note: Clicking on a particular flight track on the Map will highlight the corresponding flight or flight group on the Search Results Table.

Customize Flight Tracks

You already know that you can use the Routes window to display Filed and Flown routes on the Map. You can also use this window to customize the appearance of flight tracks on the Map. To bring up the Routes window:

1. **Right-click** anywhere on the Search Results table. Select **Routes** from the pop-up menu.

2. Click **View > Routes** on the POET main menu.

3. Click the **Routes** button on the POET Toolbar

The Routes window appears (Figure 116 on page 103). From this window, you can specify the line width and color of flight tracks on the map.

- To change the line width, simply type a new value into the width field.

- To change line color, click the button to the right of the color swatch and click a color to select it. Note that there is a rainbow coloring option included in the color swatch window. When you choose to use rainbow coloring for your flights, POET assigns a different color for each flight. The Map Legend indicates which flight is assigned a particular color. This rainbow color scheme will

automatically be applied to your Search Result charts so that flights on both the charts and the Map are assigned the same color.

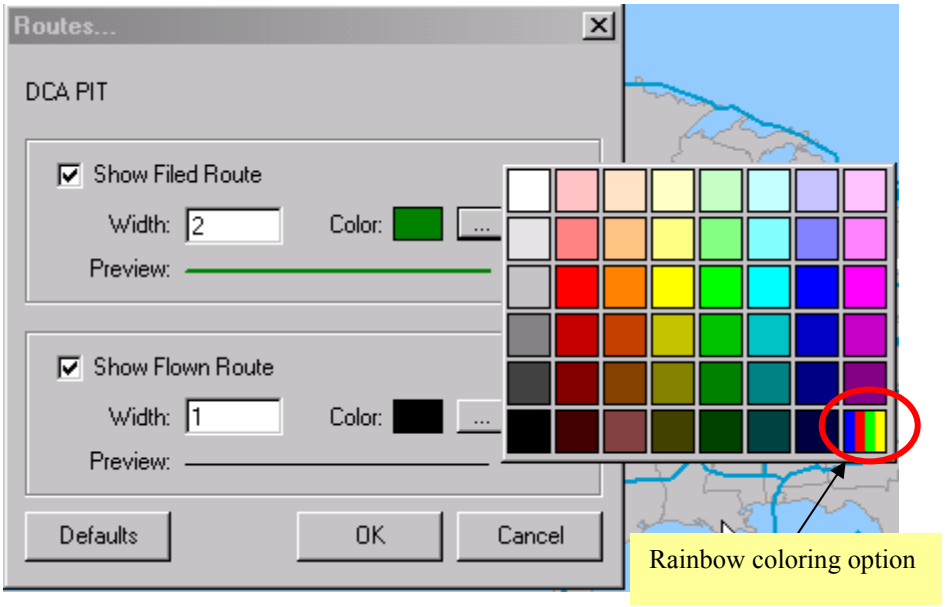


Figure 118: Available Colors for Flight Tracks

To make your changes, click **OK** in the Routes window. To return to the default values, click **Defaults**. To cancel your changes and close the window, click **Cancel**.

An Example: In our example search, let's say that the Flown Route is more important than the Filed route. For this reason, we want to make the line thickness and color of the Flown Routes tracks on the POET Map bolder than the Filed Route Tracks. To change the color we clicked the button next to the color swatch to bring up a color palette. In the color palette we clicked Black when selecting the color for the Filed Route tracks and Magenta when selecting the color for the Flown Route Tracks (Figure 119). In the Routes Editor we changed the line thickness for the Filed route to 1 and the Flown Route to 2 (Figure 120). Click **OK** to apply the changes. Figure 121 shows the end result.

Figure 119: Selecting Magenta for Flown Routes

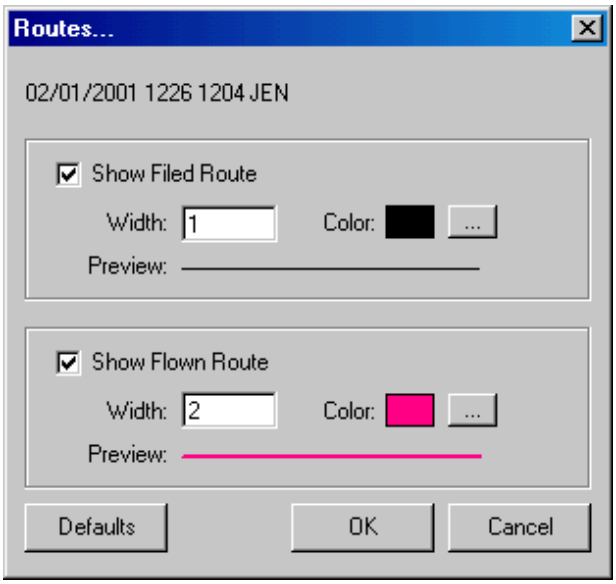


Figure 120: Route Editor Changes

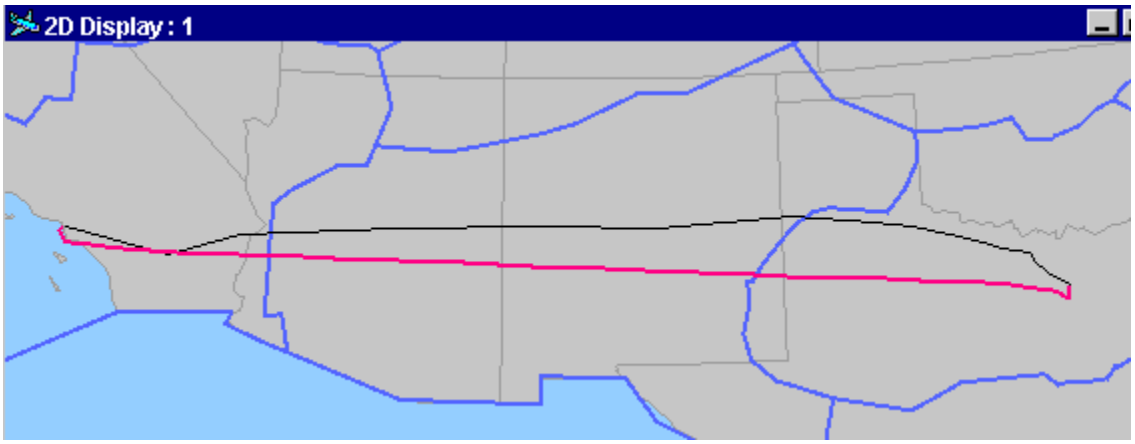


Figure 121: Map With New Route Colors Applied

The Map Legend

The Map **Legend** opens automatically when the Search Results Map first appears on your screen. It explains the default flight track color-coding system. The Map Legend is automatically updated when you apply colors to flights. You can close the window by clicking the **X** button in the upper right corner of the Legend window. To display it again, select **View > Legend** from the POET Map menu.

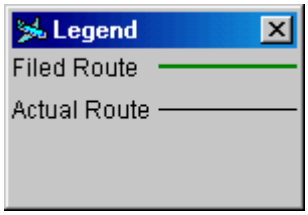


Figure 122: Map Legend Showing Default Colors

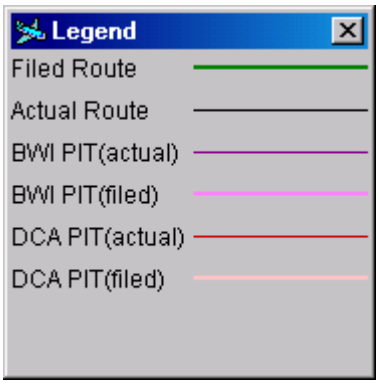


Figure 123: Legend Updated with Additional Colors

Animation

You can view events for a day in motion using the POET Map's animation capability. This allows you to play back the time/position history of selected flights and weather events. For example, you could examine what the arrival traffic situation looked like just prior to a ground stop at an airport of interest, or you could look at the complexity of traffic flowing through a sector of interest. Another use is to examine when and where flights entered a holding pattern.

Animation Settings

To view a replay of flight activity, select **Settings > Animation Options** from the POET Map menu or hit **Ctrl+A** on your keyboard. If you have the animation Time Line displayed on the POET Map, you can also click the **Animation Options button** to bring up the **Animation Options window**. There are four tabs in the Animations Options window that allow you to customize your animation:

1. Track Icons
2. CCFP Weather
3. Actual Weather
4. Time Options

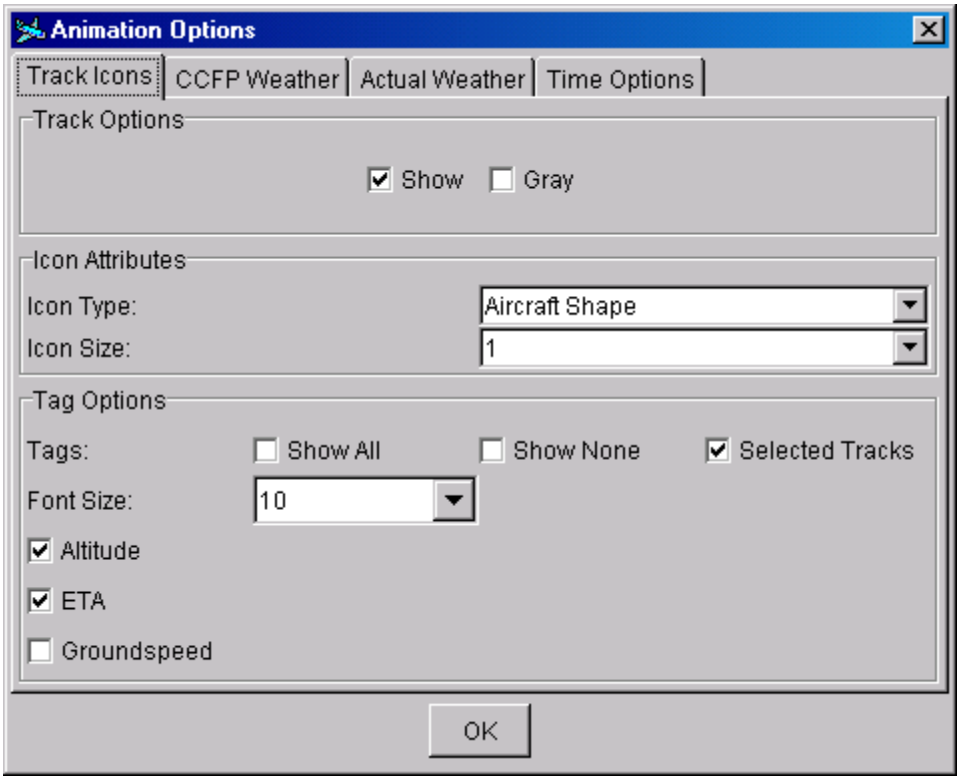


Figure 124: Track Icons

The **Track Icons** tab defines the way in which icons will be displayed on the POET Map during animation.

- **Track Options** - Click to either show the icons in full color or to gray the icons on the map.
- **Icon Type** - Click to choose the shape of your icons on the map. Icons can appear as aircraft, triangles, or spheres.
- **Icon Size** - Click to select the size of your icon. Icon size ranges from 1 to 6.
- **Tags** - Click a box to determine how POET displays text tags with the icons on the map. Text tags display specific flight information next to the flight icons. You can have text tags appear for every flight (**Show All**), no flights (**Show None**), or for only those flights whose tracks you select (**Selected Tracks**).
- **Font Size** - Use the menu provided to select a font for any text tags that appear.
- **Altitude** - Click the box to show altitude information in text tags. When the box is checked, altitude information will appear in text tags. When the box is clear, altitude information will not appear in text tags.
- **ETA** - Click the box to show ETA information in text tags. When the box is checked, ETA information will appear in text tags. When the box is clear, ETA information will not appear in text tags.

- **Ground speed** - Click the box to show ground speed information in text tags. When the box is checked, ground speed information will appear in text tags. When the box is clear, ground speed information will not appear in text tags.

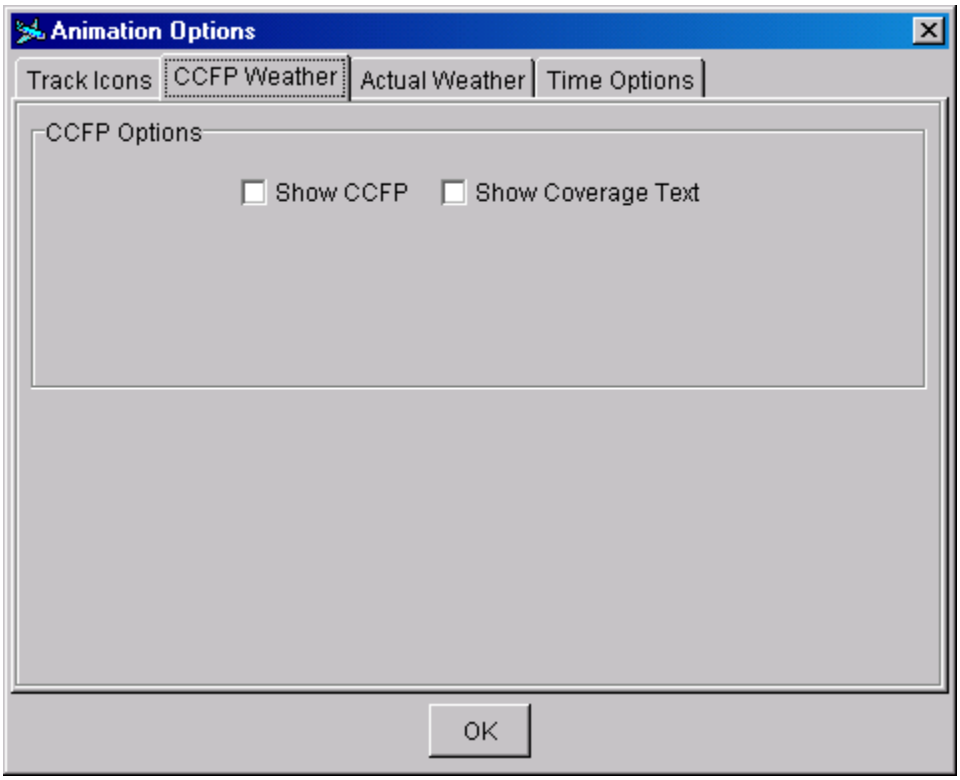


Figure 125: CCFP Weather Animation Options

The CCFP Weather tab allows you to define the way in which CCFP Weather is displayed on the POET Map during animation.

- **Show CCFP** - Click this box to show CCFP Weather during animation. When the box is checked, CCFP Weather will appear on the map during animation. When the box is clear, CCFP Weather will not appear on the map during animation.

- **Show Coverage Text** - Click this box to show text information about the CCFP Weather when it appears on the map. When the box is checked, text information will appear with the CCFP Weather. When the box is clear, text information will not appear with the CCFP Weather.

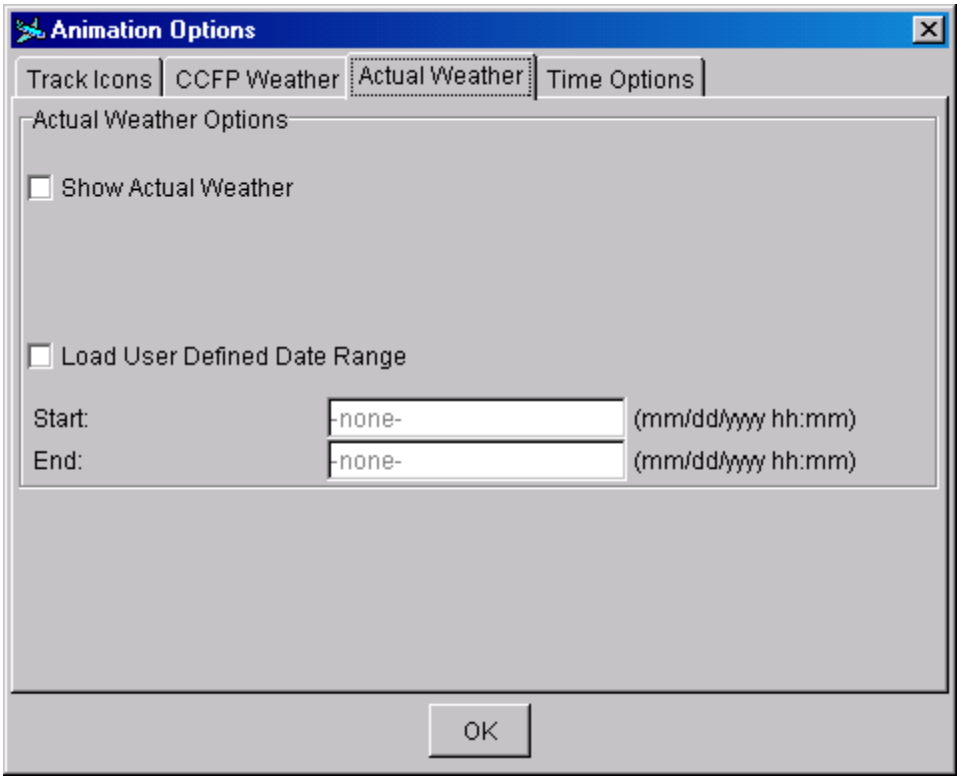


Figure 126: Actual Weather Animation Options

The **Actual Weather** tab allows you to view actual weather on the POET Map during animation. Actual Weather information is obtained from the National Weather Center.

- **Show Actual Weather** - Click this box to show actual weather events during animation. When the box is checked, actual weather will appear during animation on the POET Map. When the box is clear, actual weather will not appear during animation.

- **Load User Defined Date Range** - If you decide to show actual weather events during animation, you can specify an analysis date and time range during which the actual weather will appear. Click this box to check it and specify a date and time range. When the box is checked, you will be able to specify a date and time using the **Start** and **End** fields. Be sure to enter the range in the format specified.

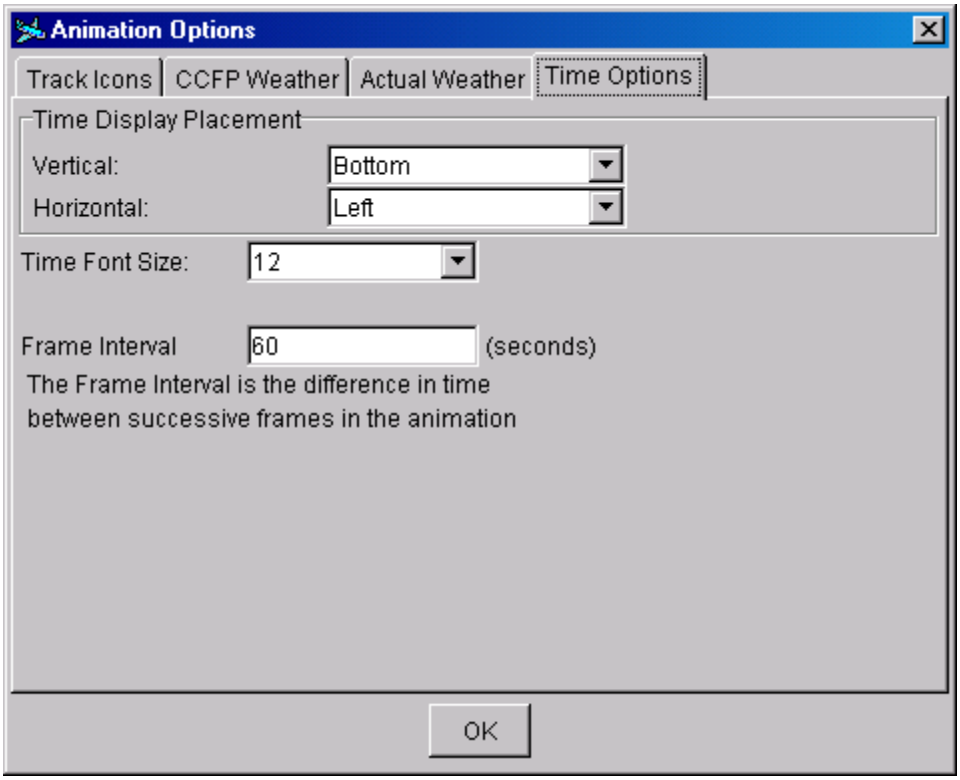


Figure 127: Time Options for Animation

The **Time Options** tab allows you to determine the placement of the animation clock and specify how much time is included in each frame in the animation.

- **Time Display Placement** - When you animate events on the map, POET places a date and time indicator somewhere on the POET Map so that you can track time as the events play. Use the **Vertical** and **Horizontal** menus to select the location of the date indicator on the map.

- **Time Font Size** - Use the menu to select a font size for the time and information that appears in the date indicator.

- **Frame Interval** - Enter a number (in seconds) equal to the amount of time included in each frame of the animation.

Animation Controls

You can control the animation on the POET Map using Animation Controls. To view the animation controls, select **View > Show Animation Controls** from the POET Map menu or click **Ctrl+T** on your keyboard. Animation Controls appear at the bottom of the POET Map. Using various buttons, you can control playback speed, as well as fast-forward and rewind through events.

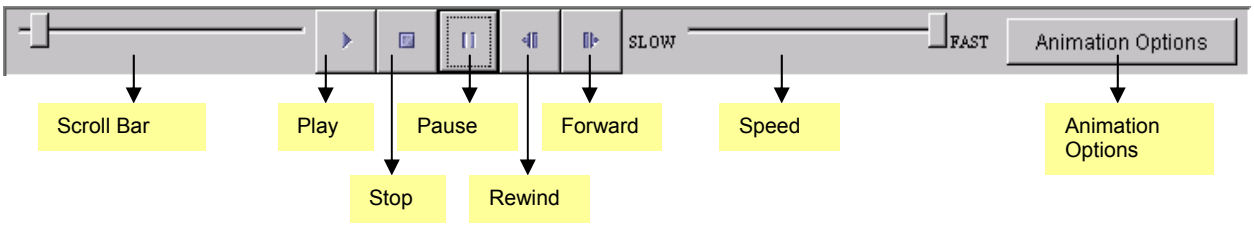


Figure 128: Time Line Information and Controls

Animation Controls:

- **Scroll Bar** The scroll bar moves automatically when you choose to "play" the Time Line. Your date and time indicator should update as the scroll bar is moved. You can click and drag the scroll bar to manually move the animation to a specific date and time.
- **Play**
- **Stop**
- **Pause**
- **Rewind**
- **Forward**
- **Animation Speed**: Use this scroll bar to adjust the speed of the animation. Click and drag the scroll bar closer to Slow or Fast, depending on which speed you prefer.
- **Animation Options**: Click this button to bring up the Animation Options window.

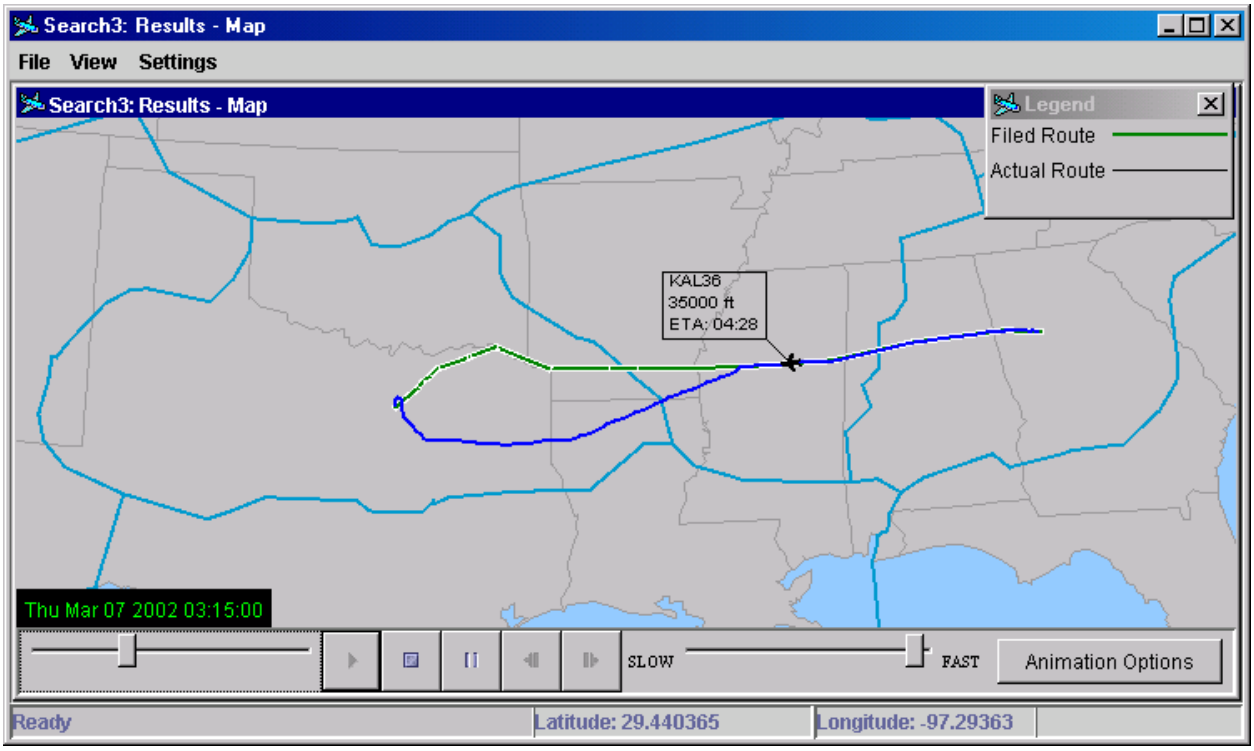


Figure 129: Animation of a Single Flight

Customize the Search Results Map

You can change the arrangement of your map display, zoom in and out, change colors and/or line styles for the map, and overlay the maps with various graphics. Using the map customization features can aid greatly in your analysis of the flight tracks. For example, if a filed versus flown route varied greatly, that variation may be explained by a sudden weather system. The CCFP weather is one of the map overlays available in POET that might help explain the observed flight tracks.

Using the Zoom Feature

You can zoom in or out in any POET map to better examine a particular point. You can then reset the zoom to return to the original screen. Use the following procedures to zoom in and out in the map:

Zoom In

To **Zoom In**, click on the map in the upper-left portion of the area you would like to see. Hold down the mouse button and drag down and to the right, creating a rectangle (Figure 130).

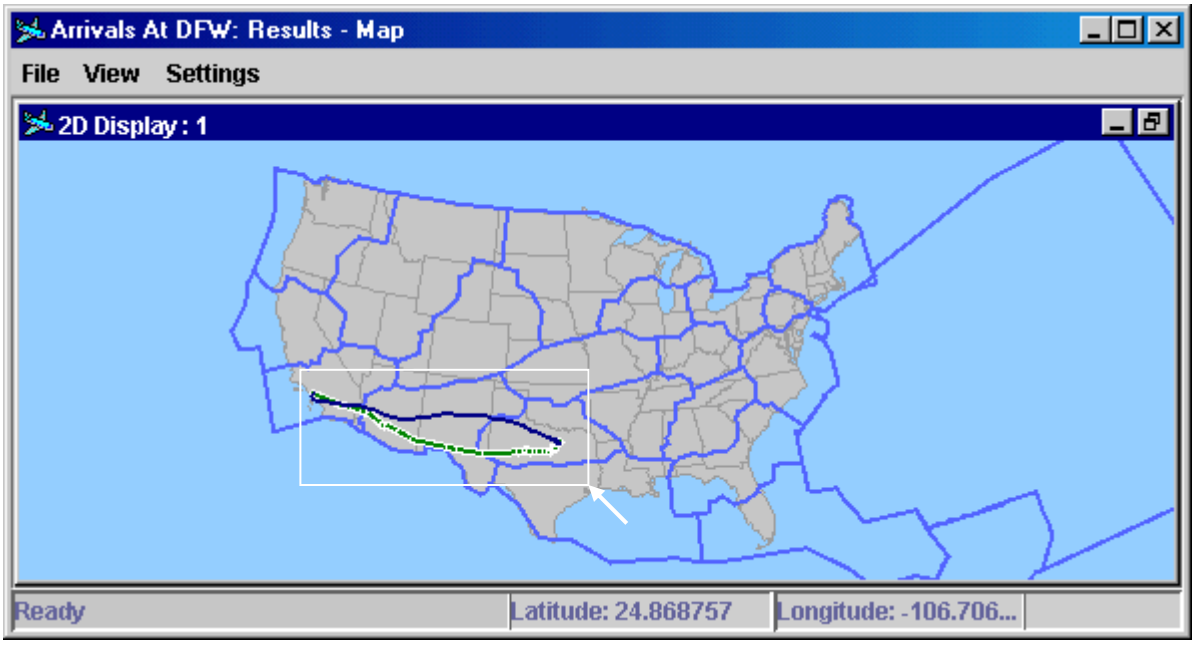


Figure 130: How to Zoom In

When the mouse button is lifted, the Map zooms in on the area selected (see Figure 131).

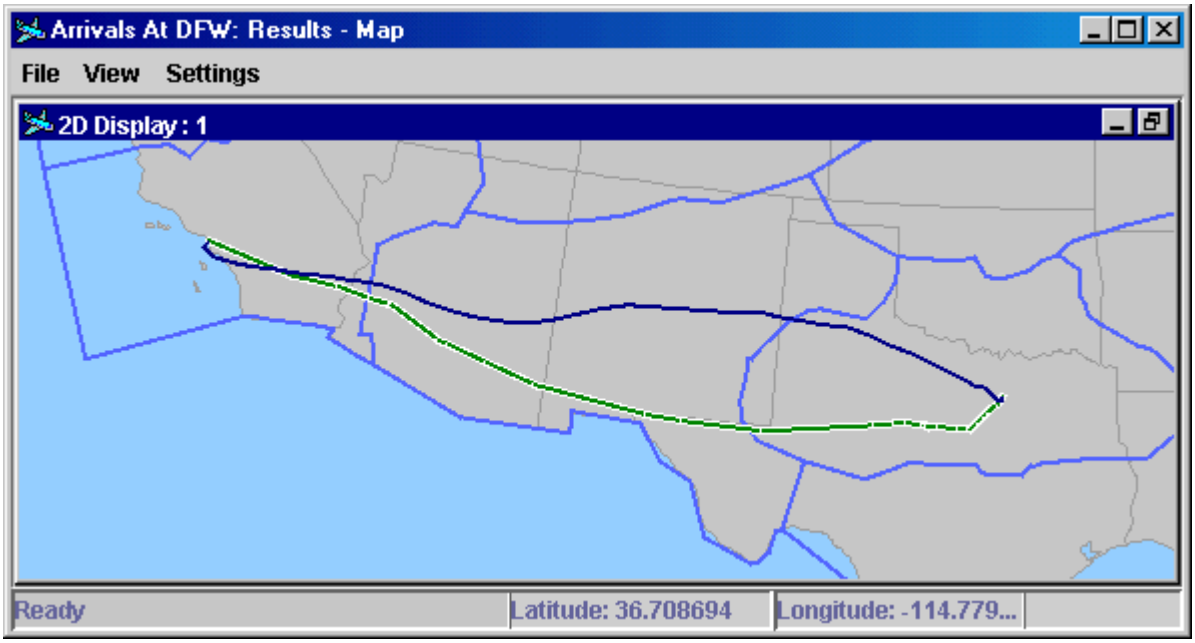


Figure 131: Zoom-in View

Zoom Out

To **Zoom Out**, simply reverse the process. Click on the lower right corner of an area, hold down the mouse button and drag the cursor up and to the left.

When the mouse button is lifted, the Map zooms out on the area selected. The degree that the map zooms out is proportional to the size of the box you draw. Bigger boxes zoom out further.

Zoom to Fit Tracks

To focus on the flight tracks displayed on the map, use the POET map's **Zoom to Fit Tracks** feature. This will size the map so that the map display zooms in as much as possible on the flight tracks without pushing any of the tracks outside the map display. To change the map display this way:

1. **Right-click** anywhere on the map and select **Zoom to Fit Tracks** from the pop-up menu.
2. Select **View > Zoom to Fit Tracks** from POET map menu.

Undo Zoom

Undo Zoom will only cancel your most recent zoom action. To undo your last zoom:

1. Select **View > Undo Zoom** from the POET map menu.
2. Click **Ctrl-U** on your keyboard.

Reset Zoom

No matter how you have changed the map display, you can always reset the Zoom to its original display. To completely reset the map zoom:

1. **Right-click** anywhere in the map and select **Reset Zoom** from the pop-up menu.
2. Select the **View > Reset Zoom** from the POET map menu
3. Click **Ctrl+R** on your keyboard.

Re-Center the Map

By default, the POET Map opens with a map of the contiguous United States in the center. This may not be the desired map view for all users. For example, users based in Alaska may find that having the map open with a map of Alaska in the center is more helpful than the default configuration.

To re-center the Map, open the file named "poetmap.ini" in the Map subdirectory in your main POET directory. Modify the following values to adjust the center of the Map:

- **Map Bounds NW**
- **Map Bounds SE**

Note that if you change the map center, you may also want to re-project the map so that your display and overlays do not appear at an angle on the map. To re-project the map, open "poetmap.ini." Modify the value for **Map Center** to re-project the map display.

Overlays and Labels

Another way to customize your display is by overlaying a variety of fixed data (sectors, airports, centers, fixes, etc.) onto the map. These overlays appear beneath the flight track(s) and provide helpful background information and points of reference for examining the flight path. The list of overlays available in POET is constantly growing. The overlays currently include airports, centers, fixes, jet routes, CCFP weather, and many others. There are several ways to display the overlays.

Show/Hide Overlays

You can apply overlays using the Show/Hide Overlays window.

1. Select **Settings > Show/Hide Overlays** from the POET Map menu
2. Right-click on the map and select **Show/Hide Overlays** for a quick view of all your overlay options.
3. Click **Ctrl+O** on your keyboard.

The **Show/Hide Overlays** window appears with a list of all the available overlays.

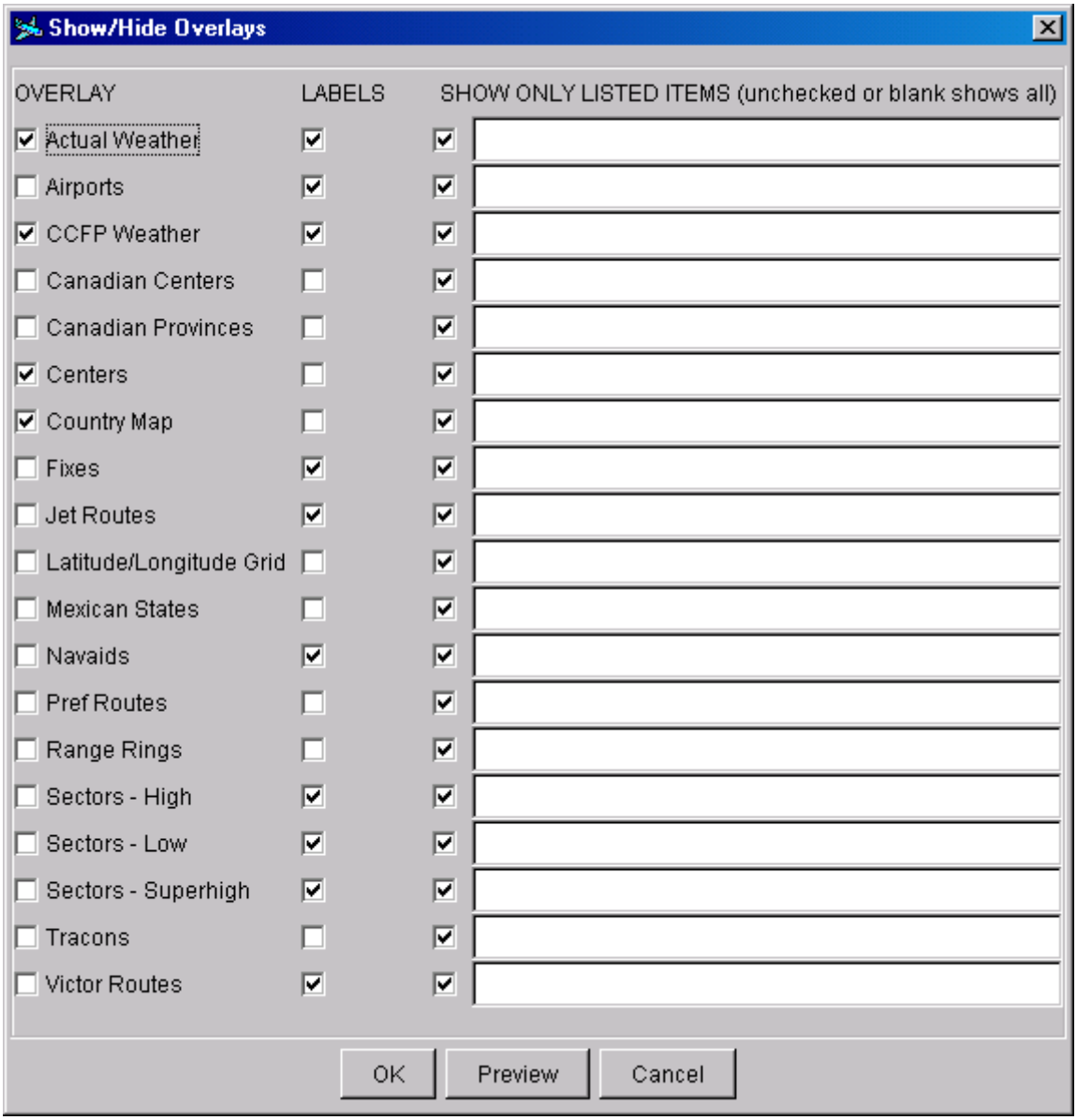


Figure 132: Show/Hide Overlays

To display an overlay, click the box under the Overlay column next to the overlay name so that there is a checkmark in the box. This will force the overlay graphic to appear on the map when you click **OK**. To view the overlay labels in addition to the graphics make sure that the boxes under the **Overlay** and **Labels** columns are both checked. Likewise, to hide an overlay on the map, click the box next to the overlay name in the Overlay column to uncheck it. The overlay should disappear from the map.

Once you check the desired overlays to display on the map, you can click **Preview** to see what your map will look like with the overlays. You can then change any of your selections. Click **OK** when you are satisfied with the results. This will close the Show/Hide Overlays window and display your selected overlays on the map. To close the window without taking any action, click **Cancel**.

Filter Overlays

Using overlay *filters*, you dictate specific elements within the overlay to view on the map. For example, when you choose to display U.S. centers as an overlay, all centers within the United States will appear on the map. Using a filter, you can choose to display only specific centers.

Select **View > Show/Hide Overlays** from the POET Map menu or click **Ctrl+O** to apply filters to your overlays. The Show/Hide Overlays window appears (see Figure 132).

You should see a column titled **Show Only Listed Items**. This column provides a text field in which you will type the specific filter values for an overlay. To apply a filter to an overlay, first type the name of the specific overlay element(s) you wish to view. For example, type ZDC in the Show Only Listed Items column's text field on the Centers row. You can use a wildcard symbol (*) to enter non-specific data points in the Show Only Listed Items text fields. Note that each element must be separated by a space or a comma. You must click the box to the left of the text field to actually apply the filters. When this box is checked POET will only display the items you defined in the Show Only Listed Items column. When this box is not checked, POET will display all the elements for an overlay.

An Example: In our example search we will define specific center areas to appear on the map. Let's display Atlanta, Dallas, and Los Angeles centers. To do this, type **'ZTL, ZLA, ZFW'** in the **Show Only Listed Items** field. Make sure the box next to **Centers** is checked and the box next to the **Show Only Listed Items** field is checked. We will not use labels. Leave that box unchecked. See Figure 133. Click OK to apply the change. Your map should look similar to Figure 134.

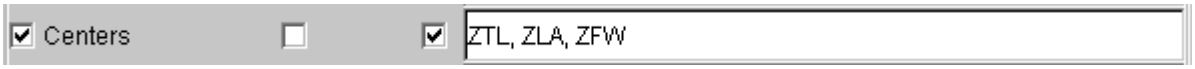


Figure 133: Specific Center Overlay Filters Defined

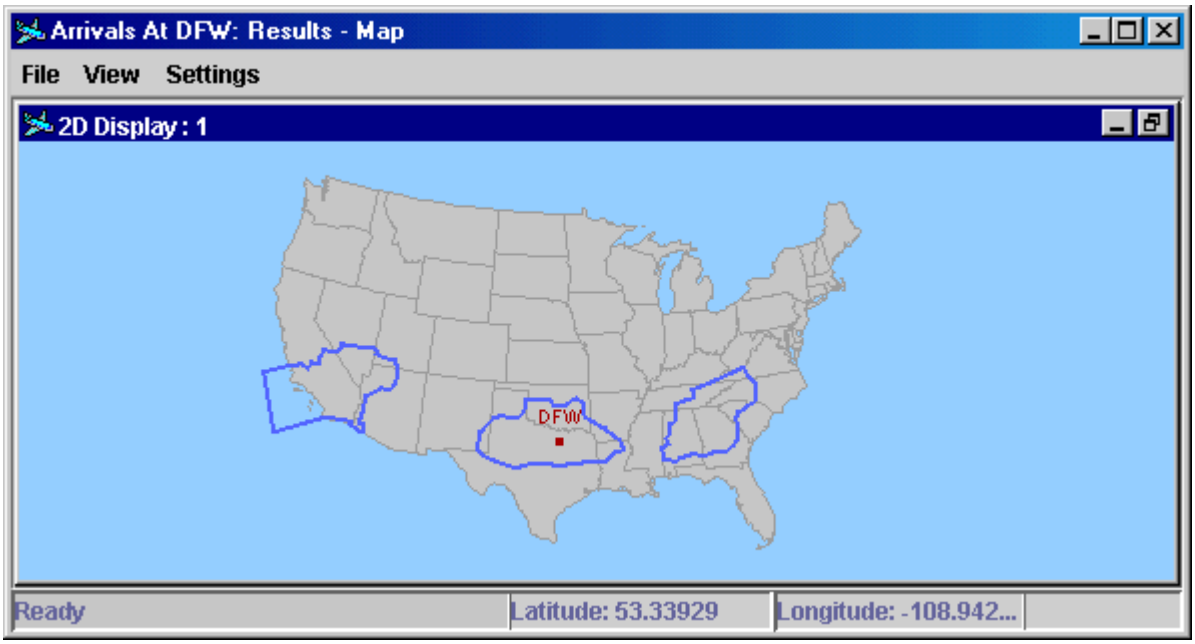


Figure 134: Map With Specific Center Overlays Defined

To preview the map display with your filtered overlays, click the **Preview** button. Once you choose which overlays to display with filters, click the **OK** button to close the window and return to the POET Map.

To clear the filters you have entered for an overlay, highlight the filter by dragging your cursor over it and press **Delete** on your keyboard.

Choosing Overlays Using Display Options

You can also display overlays through the **Display Options** window. Display Options let you customize each overlay element's appearance on the POET Map. Select **Settings > Display Options** from the POET Map menu or click **Ctrl+D** on your keyboard to open the Display Options window. When you click an overlay option in the Display Options window, one of the radio buttons to the right of the overlay indicates whether that overlay is displayed on the map. The radio buttons indicate whether the overlay is not visible, only the overlay graphic is visible, or both the overlay graphic and labels are visible.

Figure 135: Radio Buttons in the Display Options Window

If the overlay is marked as not visible, you can click another radio button to display either the graphic or graphic and label portion of the overlay. Repeat the process for any overlay you wish to display. Likewise, to remove any overlay from the map, click the overlay name in the Display Options window and click the radio button marked **Not Visible**. To see what the map looks like with your overlays, click the **Preview** button in the Display Options window. When you are happy with the map appearance, click **OK** on the Display Options window to close the window and display the map with your overlays.

Range Rings

Range Rings differ from other overlays in that you can adjust the settings for the overlay.

Range Rings are a set of concentric circles that you can place on the map for reference purposes. You can adjust the setting for the rings, including the latitude and longitude of the center for the rings, spacing between each ring, and number of rings. You can choose to *display* the range rings overlay using any overlay display methods available in the POET Map. However, to actually *add* new range rings, you must use the menu that appears when you right-click anywhere on the map. Click **Add Range Rings** on the resulting menu. The Add Range Rings window appears (Figure 136).

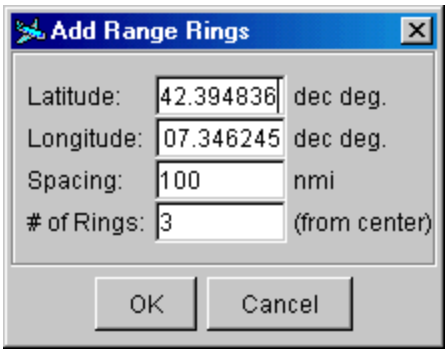


Figure 136: Add Range Rings Window

The default values for the range ring center match the location where you right-click on the map. However, you can change the center (latitude/longitude) values to whatever you want. You can also change the ring spacing and enter a new value for the number of rings that appear from the center.

To remove a set of range rings, right-click close to the center of the rings you wish to remove. Select **Remove Range Rings** from the resulting menu.

CCFP Weather

You can apply CCFP Weather as a static or animated overlay.

To apply CCFP Weather as a static overlay, bring up the **Show/Hide Overlays** window (see Show/Hide Overlays on page 116). When you select CCFP Weather in the Show/Hide Overlays window, the POET Map will display CCFP Weather whenever your search results coincide with a CCFP Weather event.

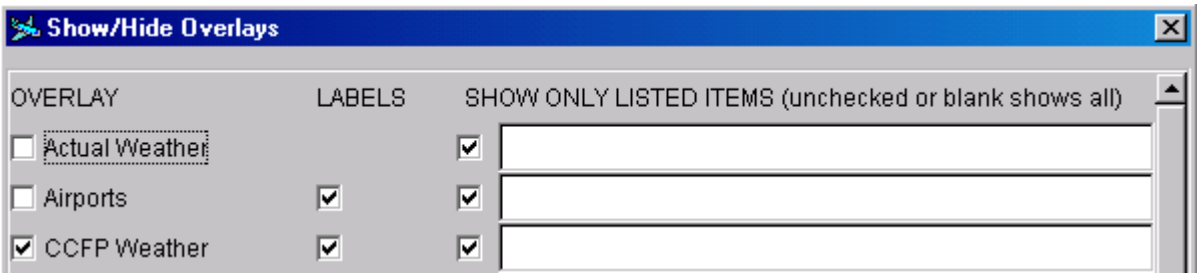


Figure 137: Show CCFP Weather From the Show/Hide Overlays Window

To animate CCFP Weather, select **View > CCFP Weather** from the POET Map menu or click **Ctrl+W**. The **CCFP Weather** window (Figure 138) appears.

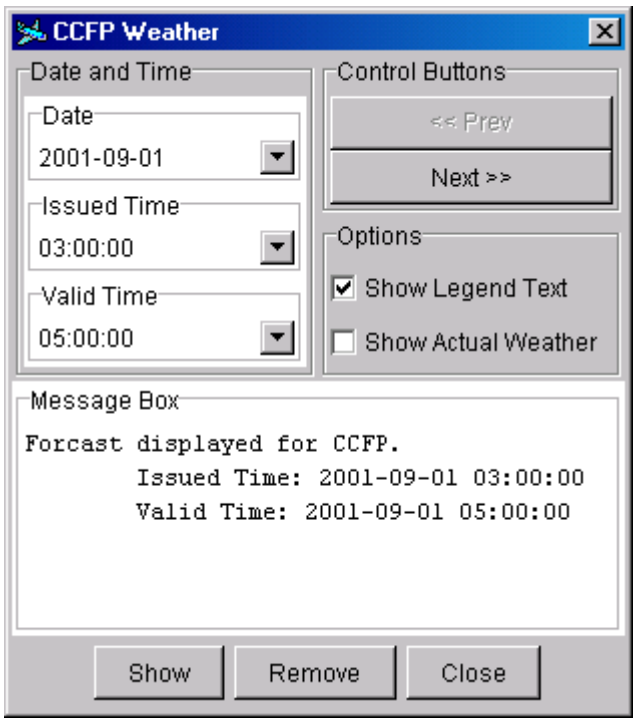


Figure 138: CCFP Weather Dialog

Use the drop-down menus to select a **Date**, **Issued Time**, and **Valid Time** for which to view CCFP Weather. Note that the CCFP is not currently produced year-round. Consequently, CCFP data may not be available for all dates, particularly during the winter months. If no significant weather events are expected for the date and time you select, the **Message Box** will indicate **Forecast Clear**. Once a weather event is forecasted, the event(s) will appear in the Message Box and on the map. You can see the progression of the forecasted weather event using the **Next>>** and **<<Prev** buttons.

To view a graphic and accompanying explanatory text of the weather event(s) on the map, click the **Show Legend Text** option in the CCFP Weather window to make sure the option is checked. To view the weather without text, simply click Show Legend Text again to uncheck the option.

To view a graphic and accompanying explanatory text of actual weather events derived from the National Weather Service, click the **Show Actual Weather** option in the CCFP Weather window to make sure the option is checked. When you choose to Show Actual Weather, graphics and text appear on the POET Map and text information about Actual Weather appears in the Message Box. When this option is not checked, POET will not display Actual Weather data.

To view a detailed explanation of the CCFP Weather text and colors, select **View > CCFP Legend** from the POET map menu. This brings up the CCFP Legend window, which explains the symbols and colors used in the CCFP weather text as well as indicates the issue time and valid time period of the forecast.

To clear the CCFP weather graphics and text off the map, select **View > Clear CCFP Weather** from the POET Map menu.

Actual Weather

You can apply Actual Weather as a static overlay using different methods. Actual weather information is obtained from the National Weather Center.

To apply Actual Weather as a static overlay, bring up the **Show/Hide Overlays** window (see Show/Hide Overlays on page 116). When you select Actual Weather in the Show/Hide Overlays window, the POET Map will display Actual Weather whenever your search results coincide with an Actual Weather event.

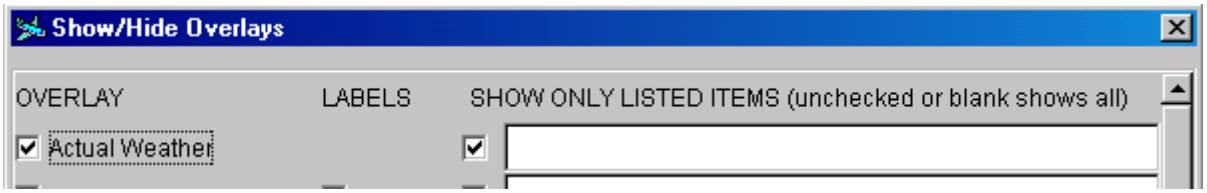


Figure 139: Choose Actual Weather as an Overlay

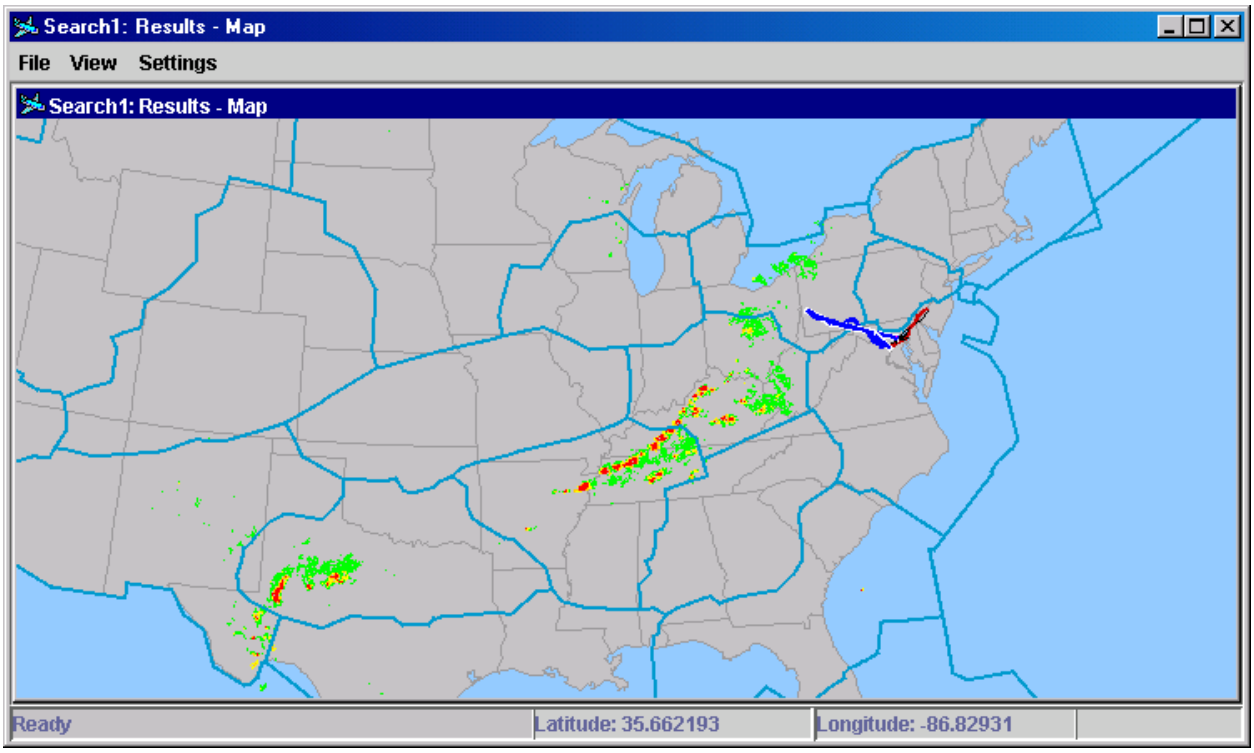


Figure 140: Actual Weather Overlay on Map

To apply Actual Weather from a specific date as an overlay, select **View > Actual Weather** from the POET Map menu. The **Actual Weather** window (Figure 141) appears.

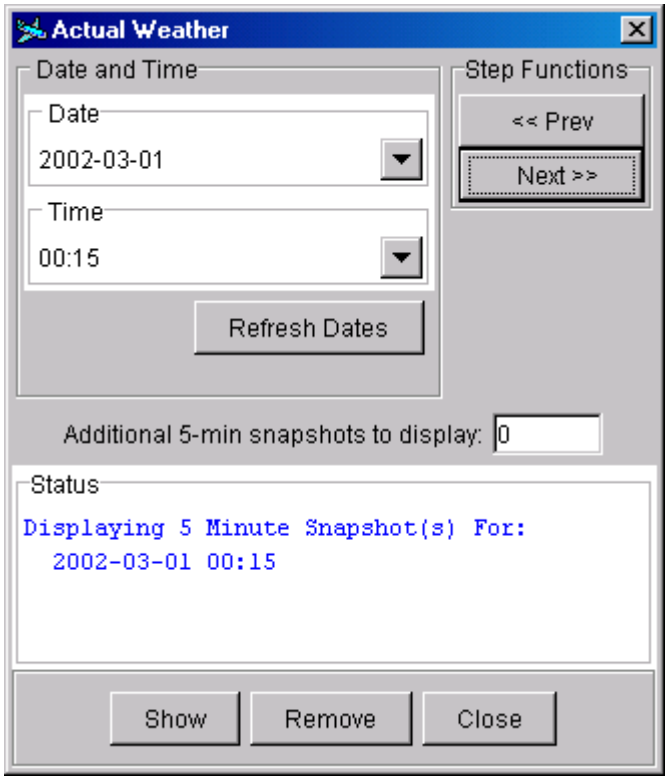


Figure 141: Actual Weather Window

In the Actual Weather window, select a **Date** and **Time** for which you wish to view weather. Note that times are available in 5-minute "snapshots" throughout the day. Click **Next** to view the next "snapshot." Click **Previous** to view the previous "snapshot." Click **Refresh Dates** to set the date and time to the first available weather data.

To see a series of 5-minute snapshots on the Map display, enter a value next to **Additional 5-min snapshots to display**. However, note that overlaying several snapshots at a time may clutter your display.

The **Status** field includes data about the weather snapshot being displayed.

Once you select a date and time, click **Show** to display the weather on the map. To remove actual weather from the map, use the Actual Weather window to select the weather date and time and click the **Remove** button.

Latitude/Longitude Grid

Using the Show/Hide Overlays window, you can place a grid of latitude and longitude lines over the map. If you want to change the appearance of the latitude/longitude grid, right-click anywhere on the map and select **Edit Latitude/Longitude Grid**. This brings up the **Latitude/Longitude Grid Settings** window.

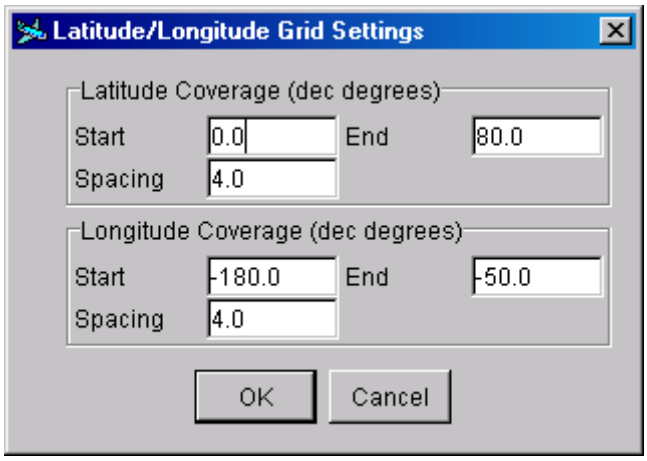


Figure 142: Latitude/Longitude Grid Settings

Use the Latitude/Longitude Grid Settings window to enter new values for the Start, End, and Spacing of latitude and longitude lines on the map. Changing the values will compress or expand the grid overlay on the POET Map. Depending on the type of analysis you are conducting, a smaller or larger grid overlay could be more beneficial.

Display Specific Overlay Elements

You can type in a group of different, specific overlay elements to view on the map, which provides a shortcut to using overlay filters. Using the **Show Overlay Elements** option, you type in a string of overlay elements to display on the map. For example, if there is a specific set of centers, airports, and navaids you wish to view, use the **Show Overlay Elements** window to type the codes for the different overlay elements all at once.

There are 3 ways to bring up the Show Overlay Elements window.

1. Select **View > Show Overlay Elements** from the POET Map menu.
2. Press **Ctrl+S** on your keyboard.
3. **Right-click** anywhere on the map and select **Show Overlay Elements** from the menu that appears.

The Show Overlay Elements window appears (Figure 143).

Figure 143: Show Overlay Elements Window

Type the overlay elements you want to see on the map into the *Overlay Elements* field. Each element should be separated by a space.

Any overlay element you enter automatically appears as a filter in the **Show/Hide Overlays** window. To remove the filters, open the Show/Hide Overlays window and click the box next to the appropriate row under Show Listed Items Only so that the box is no longer checked.

Please note that you cannot use a wildcard symbol (*, ?) in the Overlay Elements field. To differentiate between a navaid and airport code, you may prefix navaid codes with a plus symbol (+) and airport codes with the "at" symbol (@). Otherwise, if a navaid and an airport share the same 3-character identifier, both will appear on the map.

An Example: In our example search, we wanted to show DFW on the map. In the Show Overlay Elements window, type **DFW**. This will display any airports, navaids, and other locations named 'DFW.' To see just the airport, type '@DFW.' When you click the **Show** button, your map should look similar to Figure 144.

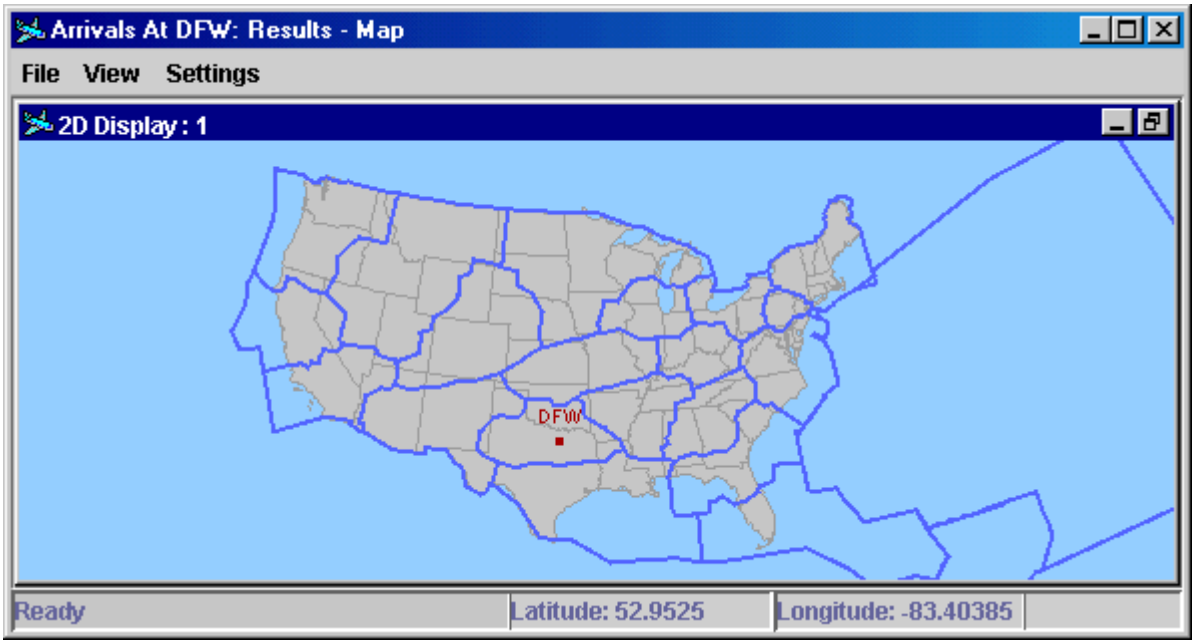


Figure 144: Map with the DFW Overlay Element

Remove Specific Overlays

If you use the **Show Overlay Elements** window to place specific overlay elements on the POET Map, you can use the same window to remove the overlay elements. Note that this function will only work if you have not closed the Show Overlay Elements window after displaying the elements on the map. Click the Remove button on the Show Overlay Elements window to clear the overlay elements from the map that were placed on the map using the Show Overlay Elements window.

Customize Overlay Appearance

To change the appearance of the available POET Map overlays, select **Settings > Display Options** from the POET Map menu or click **Ctrl+D** on your keyboard. This opens the **Display Options** window.

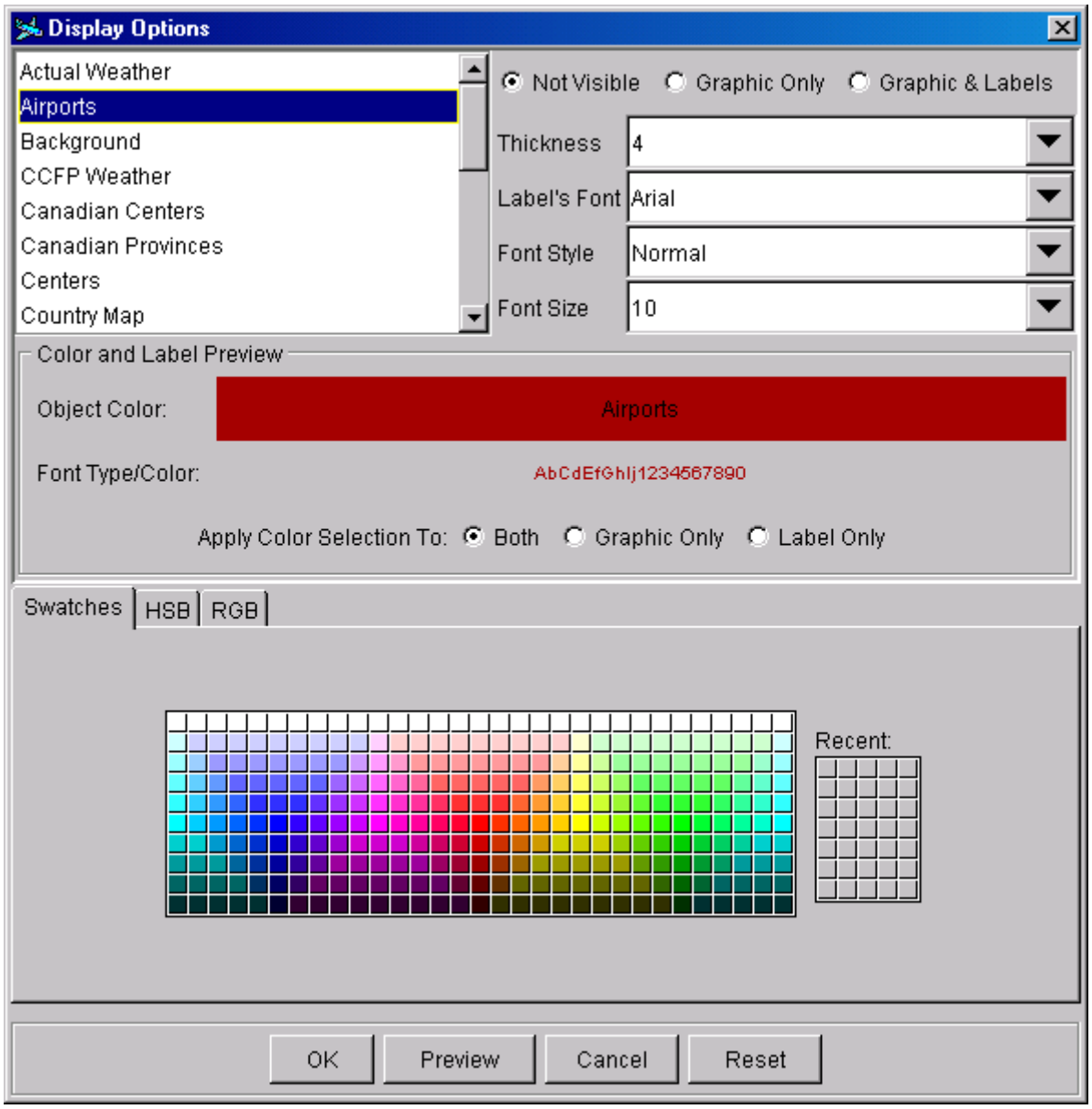


Figure 145: Display Options Window

Every overlay consists of either a symbol or a set of lines that denote borders or routes; this is the graphic portion of the overlay. You can also choose to label the overlays; the label is the text portion of the overlay. You can change both the graphic and text attributes of an overlay using the Display Options window.

To change the display attributes of a map overlay, select an overlay from the menu in the upper left of the Display Options window. Note that airway intersections are considered "fixes" on the map. To change the way the map displays airway intersections, select the overlay named Fixes. Once you select an overlay, you can choose from the listed attributes to change the overlay appearance. You must choose options for each overlay individually.

- **Object Thickness** - Click the arrow to reveal a pull-down menu of available line thickness values. Click the desired thickness to change the overlay graphic.

- **Label's Font** - Click the arrow to reveal a pull-down menu of available fonts. Click the desired font for the overlay label.

- **Font Style** - Click the arrow to reveal a pull-down menu of available styles. Click the desired font style for the overlay label.

- **Font Size** - Click the arrow to reveal a pull-down menu of available font sizes. Click the desired font size for the overlay label.

- **Object Color and Font Type/Color** - Next to the label **Color Selection Applies To**, click whether you want the color you choose to apply to the overlay graphic, label, or both. Next click a color tab to reveal a palette of colors for the overlay graphics and labels. There are several color palettes available: swatches, HSB, and RGB colors. Click the desired color for the graphic or label. The Display Options window will preview the color for you. Continue selecting colors until you find a desired color scheme for your overlay.

To view how your settings will look on the map, click the radio button on the top of the Display Options window marked "**Graphic & Labels**." Then click **Preview**.

To return the overlay settings to their original default values, click Reset.

An Example: For our example search we will make a simple change to the Map display. Let's change the color that airport grahics and labels are displayed. The default color is maroon. Let's change it to yellow. To do this, click the overlay element **Airports** in the Display Options window. In the bottom half of the Display Options window, click on a yellow square (Figure 145). Click **OK** to apply your change. Your map should look similar to Figure 146.

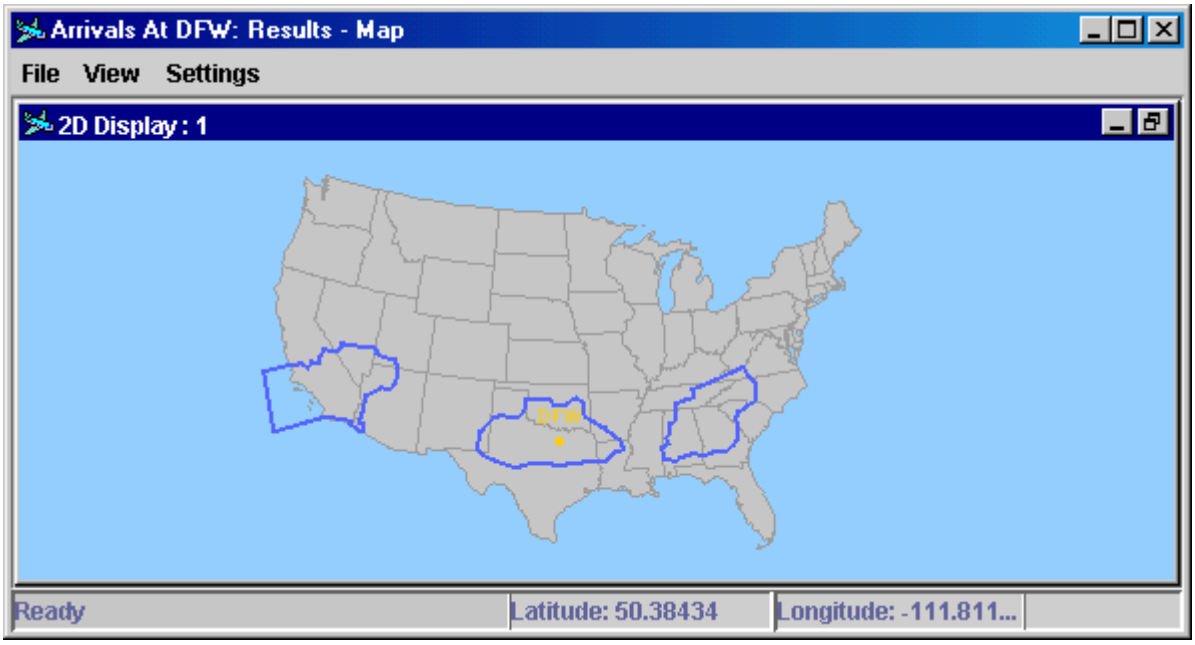


Figure 146: Map With Airport Color Defined as Yellow

Save The Map

After you have displayed and customized the Map to fit your needs, you may want to save the image for further data analysis. To save your Map data, select **File > Export Map as GIF** from the POET Main Menu, select **File > Save as Gif** from the POET Map Menu, or click **Ctrl-G** on your keyboard. You can then specify the file name and directory you would like to use to store your file.

Creating a POET Report

While using POET you can document your results by creating a POET Report. Reports can be viewed later or shared with others. The POET report generation capability automatically builds reports in HTML format for viewing in a web browser (e.g. Netscape Navigator or Internet Explorer). You select the text and graphics to insert in your report. You also decide how your report looks by formatting the text and graphics. POET will initially insert your text and graphics in the same order in which you select them for inclusion into the report. The report's page order can be modified later.

The POET Report Display

POET builds reports using simple HTML. You should be able to view a POET report in any browser that supports frames. When you view a POET report in your web browser, the pages are divided into 2 frames (see Figure 147). By clicking and dragging on the frame divider, you can change the size of each frame to suit your needs.

The left frame contains a table of contents for the report. This allows you to see the contents of the report page by page. You can click on any link in the table of contents to view a particular page in the report. The actual pages of the report are displayed in the right frame with links to go to the next or previous page.

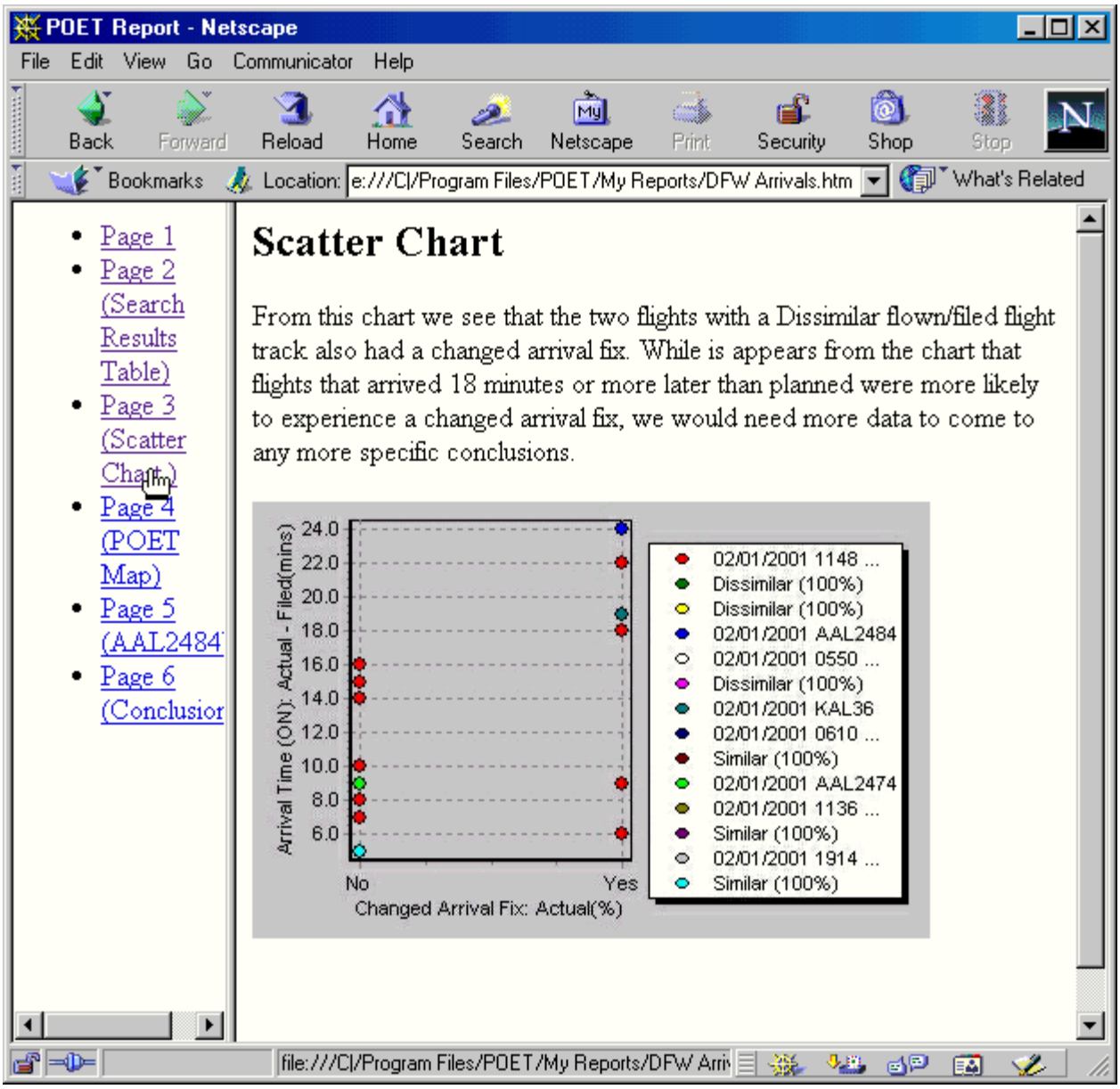


Figure 147: Sample Page from a POET Report

Start a New Report

To start building a report in POET, select **Report > Start** from the POET main menu. You will be prompted to choose a directory folder for the report files as well as a report file name, report title, and a description.

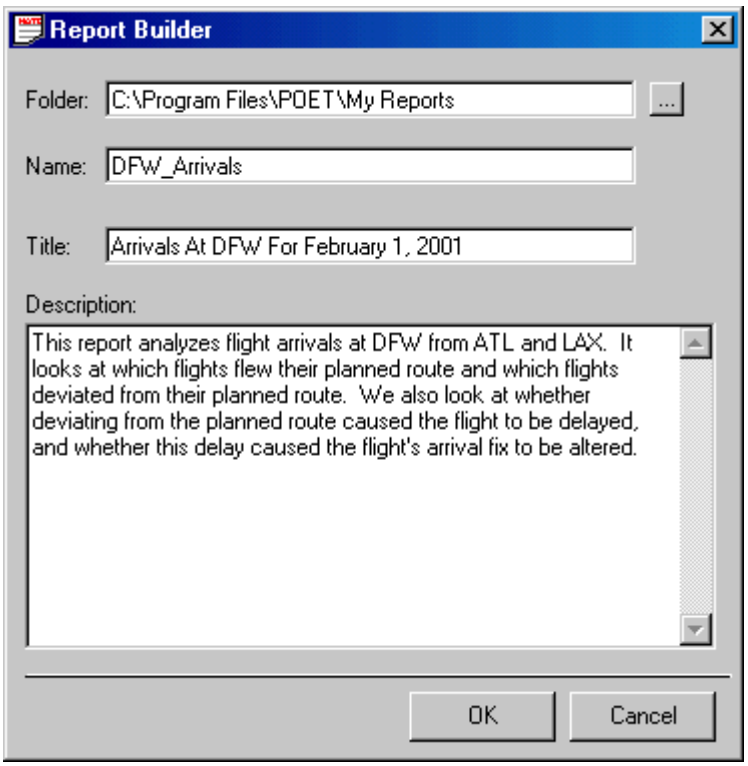


Figure 148: POET Start Reports Prompt

The default directory folder for any POET report files is My Reports subdirectory under the directory in which POET resides. However, you can change the folder location using by clicking the Browse button or typing in a new folder location.

Type in a name for your report file. It is important that you do not change the file extension (htm) because POET builds its reports in HTML format for viewing in a web browser.

You can type in any name for your report title or leave this field blank. If you leave the field blank, the first page of your report will not have a title. However, the table of contents for your report will still list the title page as "Intro."

Use the report description field to type in any additional text you want on the report title page. Any text you type in will appear underneath the report title. You do not have to enter anything into this field.

An Example: We will use our example Search to build a POET Report. In Figure 148, we have typed in a file name, report title, and descriptive text about the report. Click **OK** to save your report and begin working on it.

Place Items into Your Report

You can add a variety of items to your POET report, including tables, charts, maps, and individual flight details generated by a POET search as well as your own text and images. You must place each item into the report separately, as each item added creates a new page or link in the report. The POET report pages

are generated in the same order in which you select the items for inclusion; however, you can change this order at any time by using the Report Organizer.

Add a Table

You can add all or part of any POET Search Results Table. To add a table to your report, select **Report > Add Table** from the POET main menu. The Report - Add Table window pops up.

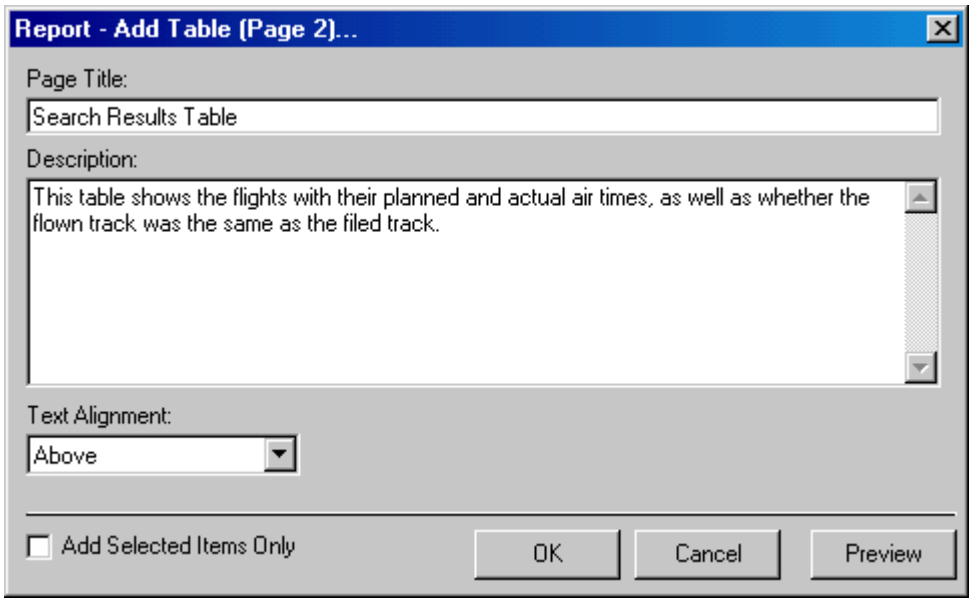


Figure 149: Report - Add Table Window

Use this window to type in a page title and any descriptive text about the page or the table.

An Example: You can see that in Figure 149 we typed in a page title, "Search Results Table," and some text about what is displayed in the table. Click **OK** to add the table to your report.

If you type text into the description field, you can choose to have this text appear either above or below the table image on your report page. Select an option from the Text Alignment menu to place your text on the page.

If you want only specific table rows included in your report page, click **Add Selected Items Only** in the Report - Add Table window. Only the highlighted rows in a POET table will appear in the table graphic on your report page. To use this option, you must have already selected the specific table rows. To select specific rows for your report page, click a table row and either ctrl+click other rows individually or shift+click to select a range of rows.

Click **OK** to add the report page. Click **Cancel** to close the window and do nothing. Click **Preview** to see what the report page looks like in a web browser.

Add a Chart

You can add either a POET Scatter Chart or Bar Chart to your report. To add a chart to your report, first select the chart you want in the Charts window by clicking either the Scatter chart or Bar chart tab. The chart you want must be showing to add it to your report. Make sure you have modified the chart to fit your report (e.g. zoom in, change the chart settings, etc.). Also, note that the size of your chart in POET is the size your chart will appear on your report page. Make sure you have made the chart window as big or small as you want it to appear in the report. Once you are satisfied with the chart display, select **Report > Add Chart** from the POET main menu. The Report - Add Chart window pops up.

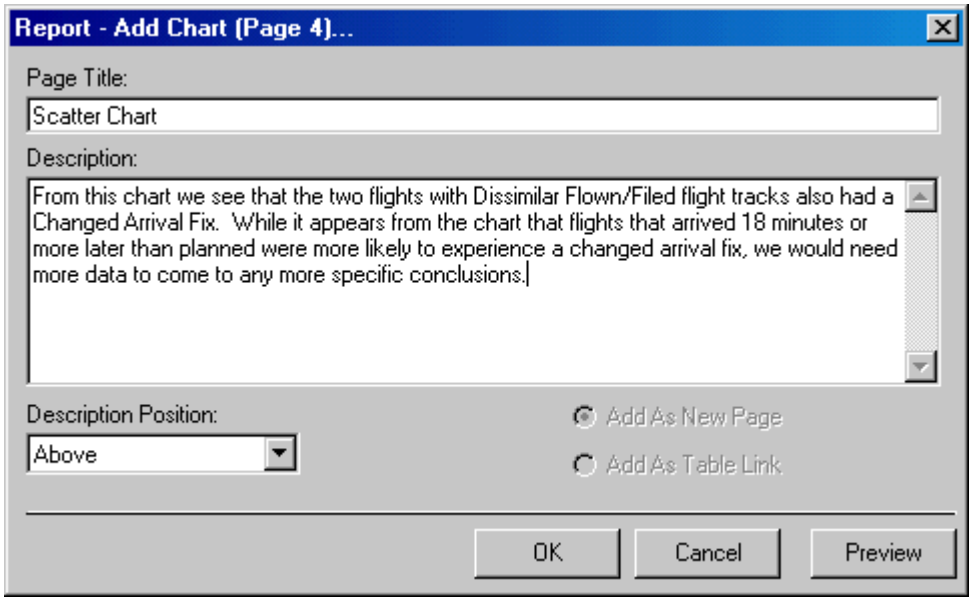


Figure 150: Report - Add Chart Window

Use this window to type in a page title and any descriptive text about the page or the chart.

An Example: To add a chart to our report, we used the Scatter Chart that we modified in our example search so that it displays Arrival Time (ON) and Changed Arrival Fix (see Figure 106 on page 92). In the Add Chart window, we typed in a title for our page and descriptive text that explains what is shown on the chart (Figure 150).

If you type text into the description field, you can choose to have this text appear either above or below the chart image on your report page. Select an option from the Text Alignment menu to place your text on the page.

You can choose to have the chart either appear as an individual page in your report or, if applicable, as a link to a particular row in a table already in the report. To add the chart as an individual page in your report, click the **Add as New Page** option.

If you have already added the corresponding table for your chart to your report, you can add a chart as simply a link from the table. The chart will not be a separate report page, but will be visible when you

click on the link in the table page of your report. To add your chart as a link, click the **Add as Table Link** option in the Report - Add Chart window.

Click **OK** to add the page or link. Click **Cancel** to close the window and do nothing. Click **Preview** to see what the report page looks like in a web browser.

Add a Map

You can add a POET Map to your report. To add a map to your report, be sure to set up your map *exactly* as you want it to display in the report (e.g. zoom in or out, show overlay elements, size the window, etc.). Note that the map graphic will appear in your report exactly the same size as what you view in POET. Select **Report > Add Map**. The Report - Add Map window pops up.

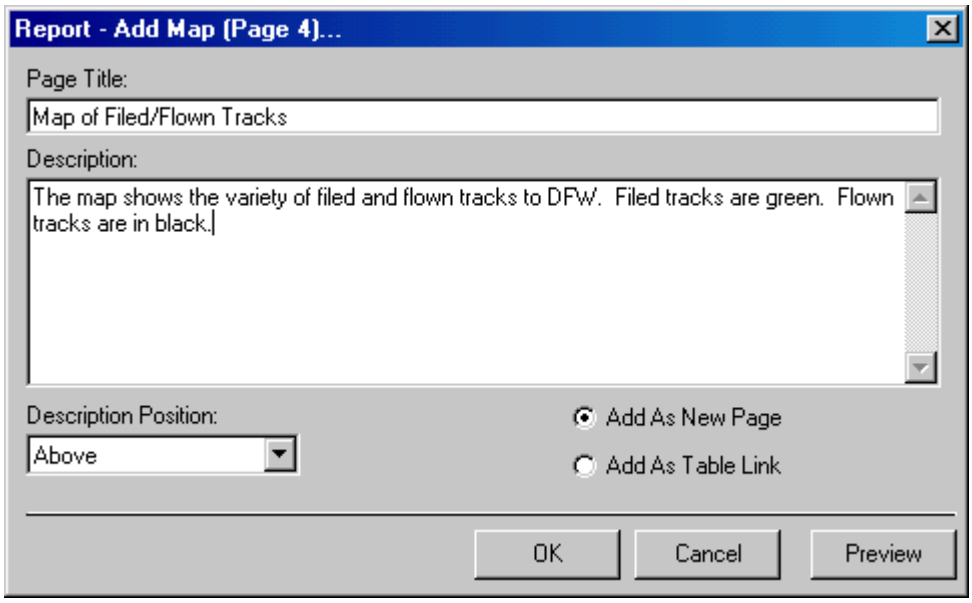


Figure 151: Report - Add Map Window

Use this window to type in a page title and any descriptive text about the page or the chart.

An Example: We used the map to display the filed and flown tracks for all the flights in our Search Results Table. We then added the Map as a New Page in our report. We filled in a title for the page and descriptive text about the map's display.

If you type text into the description field, you can choose to have this text appear either above or below the chart image on your report page. Select an option from the Text Alignment menu to place your text on the page.

You can choose to have the map either appear as an individual page in your report or, if applicable, as a link to a particular row in a table already in the report. To add the map as an individual page in your report, click the **Add as New Page** option.

If you have already added the corresponding table for your map to your report, you can add the map as simply a link from that table. The map will not be a separate report page, but will be visible when you click on the link in the table page of your report. To add your map as a link, click the **Add as Table Link** option in the Report - Add Map window.

Click **OK** to add the page or link. Click **Cancel** to close the window and do nothing. Click **Preview** to see what the report page looks like in a web browser.

Add Individual Flight Details

To add a report page that shows individual flight details, you must first use the POET Search Results Table to drill down to the individual flight level. If you have not reached this level, the option to add an instance is not available under the Report menu.

Once you have chosen a flight instance, you should see a tabular listing of instance data where the results table was located. The report page will display the information in 3 tables to correspond with the 3 data tabs on the flight instance display (General Information, Performance Metrics, and Routing Information). Select **Report > Add Instance**. This brings up the Report - Add Instance window.

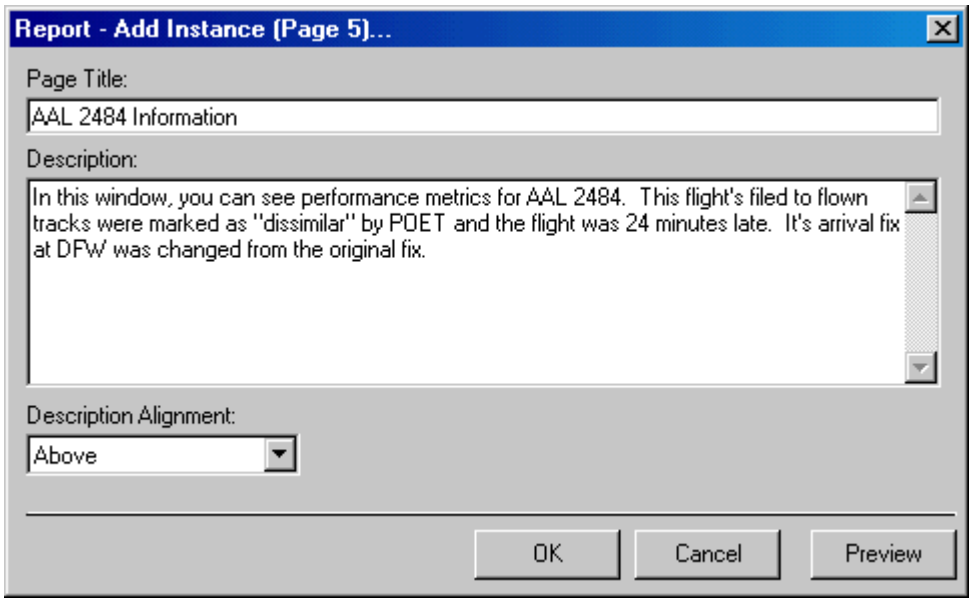


Figure 152: Report - Add Instance Window

Type the title of your page into the title field. Add any text you want to the description field. Using the Text Alignment menu, click to select whether your text will appear above or below the instance tables.

An Example: In our example search we double-clicked the first flight grouping in the Search Results Table until we saw the row of information for AAL2484. Double-clicking on this row then brought up the Flight Window. We clicked the Performance Metrics tab and chose to add this information as a page in our report. We filled in a title for the page and descriptive text in the Add Instance window (Figure 152).

Click **OK** to create and add the page to your report. Click **Cancel** to close the window without taking any action. Click **Preview** to see what your report page will look like.

Add Text

You can add a text-only page to your report at any time. Select **Report > Add Text**. The Report - Add Text window pops up. Type in the title of your page. Type in any text you want to appear on the page in the Text field. You can also cut and paste text from other documents into the text field (e.g. text from a route advisory message). Then select your text alignment from the Text Alignment menu. Your choices are to have your text left-aligned, center-aligned, or right-aligned on the report page.

An Example: We used POET's Add Text option to add a conclusion page to our report. We entered a page title and descriptive text about any conclusions we drew from our search. We selected Left as the Alignment value and clicked **OK** to add the page (Figure 153).

Click **OK** to create and add the page to your report. Click **Cancel** to close the window without taking any action. Click **Preview** to see what your page will look like in the report.

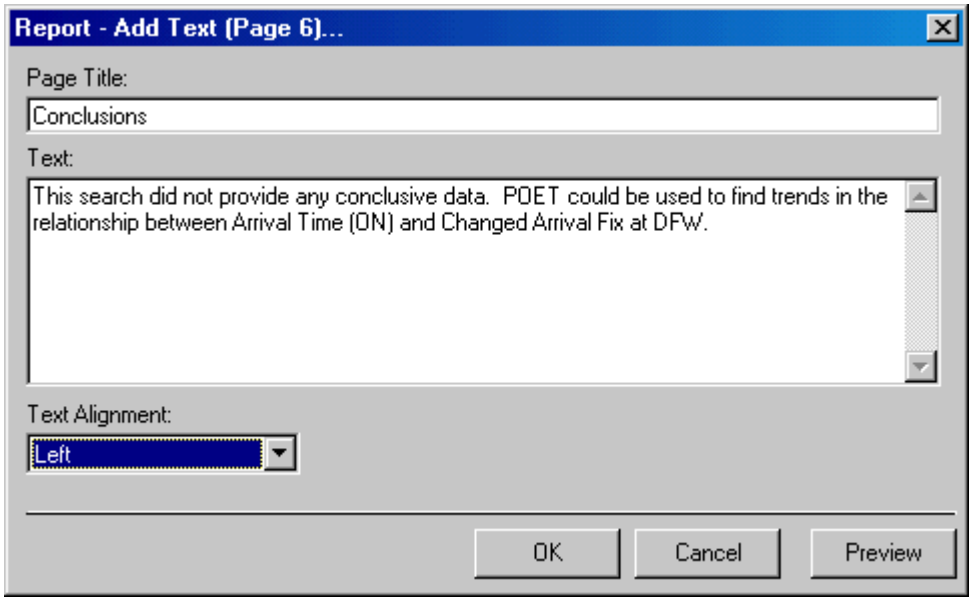


Figure 153: Report - Add Text Window

Add an Image

You can add a page with a non-POET graphic image to the report, such as a picture of a weather map. To add an image page to the report, select **Report > Add Image**. The Add Image window that pops up allows you to browse your computer for the image file you want. Find and select the image file you need and click Open. The Report - Add Image window then appears.

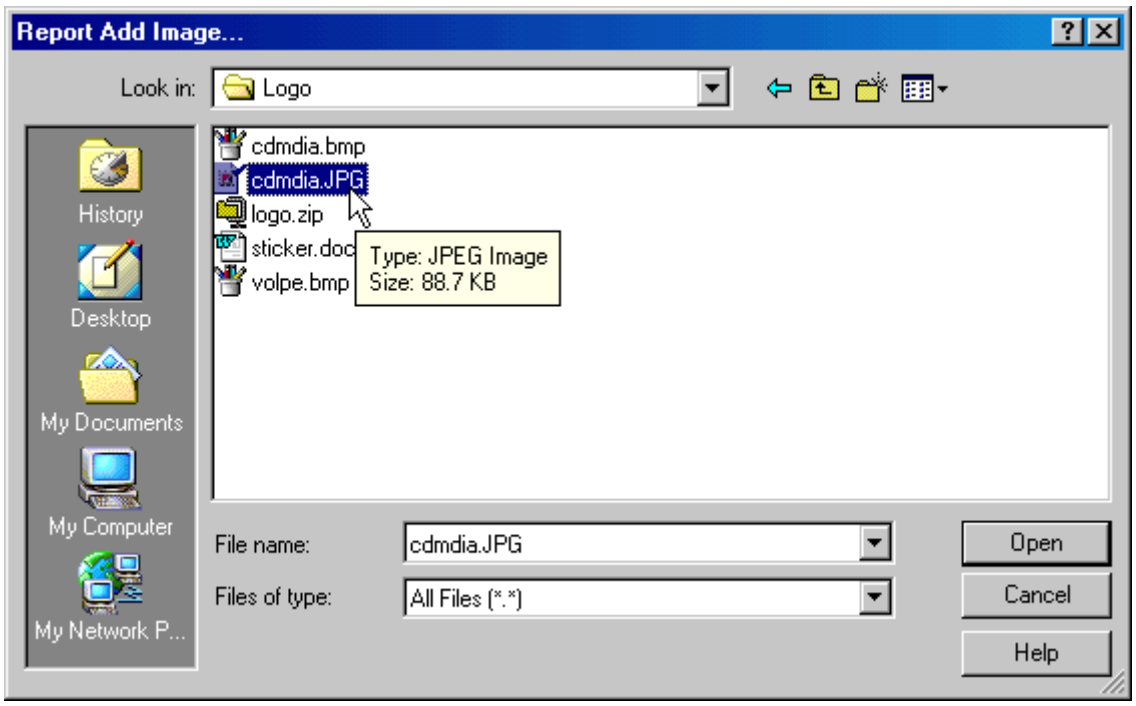


Figure 154: Browse for Your Image File

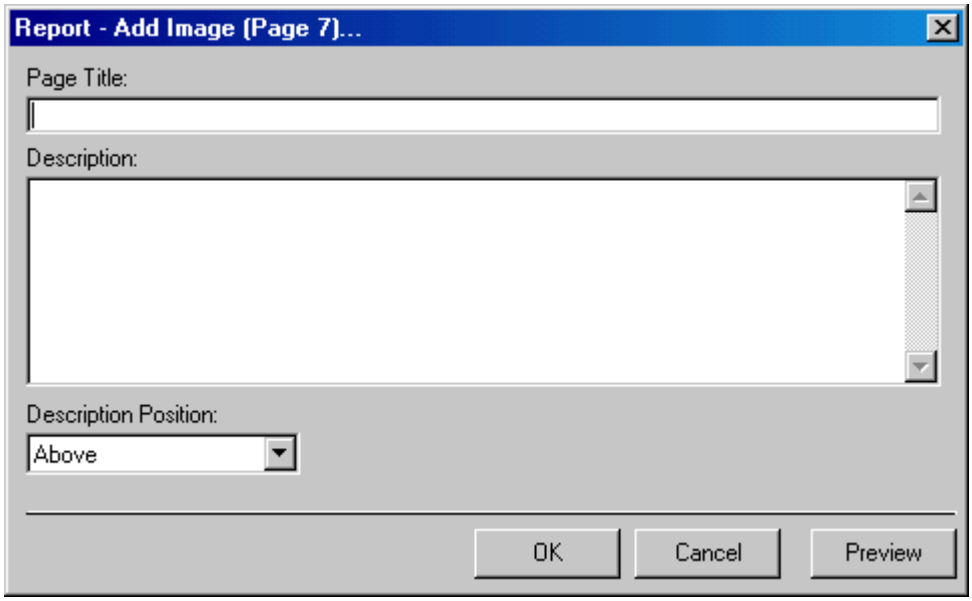


Figure 155: Report - Add Image Window

Type the title of your page into the title field. Add any text you want to the description field. Using the Text Alignment menu, click to select whether your text will appear above or below the image.

An Example: We browsed for a jpeg image on our computer and will use that as a title page. For now, to copy An Example, find an image on your own computer to use in your report. Leave the Add Image

Window blank. To see how to make this page your introductory page, see Rearrange Report Pages on page 138.

Click **OK** to create and add the page to your report. Click **Cancel** to close the window without taking any action. Click **Preview** to see what your report page will look like.

Preview and Change Your Report

You can preview individual pages before placing them into a POET report. You can also preview, and if necessary change, your report contents without actually opening a web browser.

From the Add a Page Window

Each time you add an item to your report, you are creating a new report page. For each item you add POET prompts you to enter a page title and descriptive text. In this same prompt window, there is a **Preview** button so you can look at the report page before actually inserting it in the report. Click the Preview button to see what your report page looks like. Once you preview the page, you can go back to the window in which you entered the page text and change the text and its placement until the page looks the way you want.

Figure 156: Preview Button

From the Report Organizer

To preview and/or change the contents of your report without opening a web browser, select **Report > Organizer**. This brings up the Report Organizer window. The window is a simple text listing of the pages included in your report.

Rearrange Report Pages

To rearrange the contents of your report, click the name of the page you wish to move. The page name should be highlighted. Then click the up and down arrow buttons at the top of the organizer window to move your page to the desired location in the report.

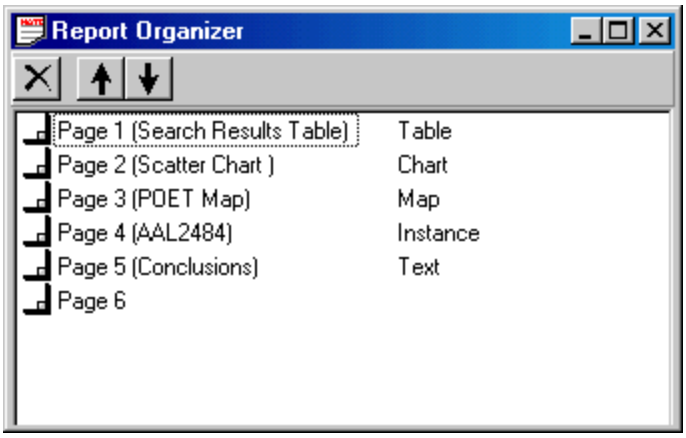


Figure 157: Our Report Pages

An Example: In our example, we want to move Page 7 to be Page 1. Page 7 contains our graphic. To do this, click on Page 7 in the Report Organizer. The click the up arrow button until Page 7 is moved to Page 1. See Figure 158 and Figure 159.

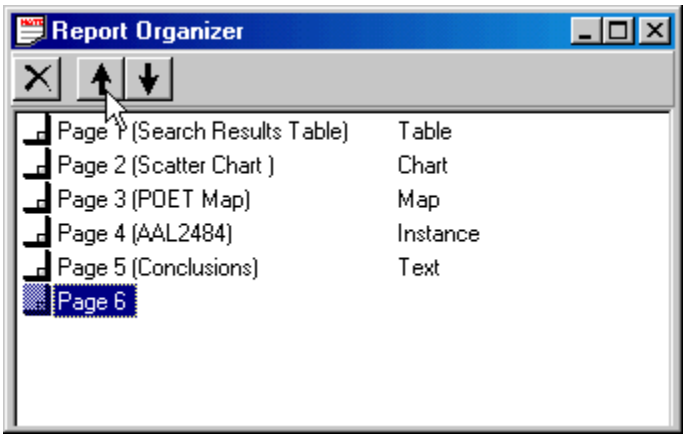


Figure 158: Moving a Report Page Up

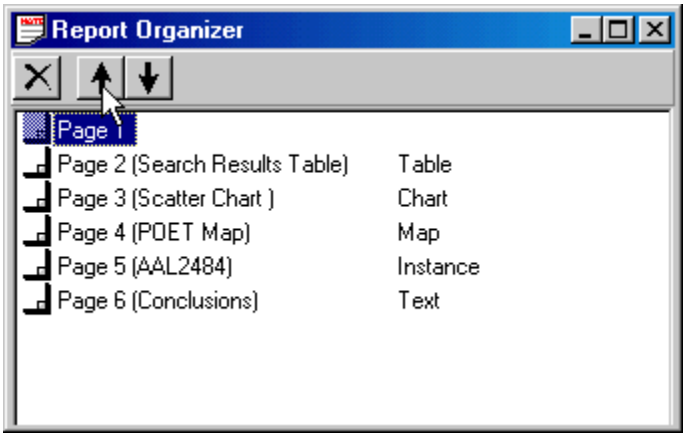


Figure 159: Page 6 is now Page 1

Change Page Appearance

To view or change a report page's appearance, double-click the page name in the Report Organizer. This brings up the **Add** window for that page. The **Add** window identical to the windows you used to add pages to your report. Use this window to edit any text or page appearance details (e.g. alignment) by entering new information into the window. Click **OK** to make the changes. Click **Cancel** to close the window without making the changes. Click **Preview** to see what the report page looks like in the web browser.

Delete Report Pages

The report organizer window also allows you to delete pages from your report. To delete a page, click on the page name. Then click the **X** button at the top of the report organizer window. POET will prompt you to decide if you really want to delete the page. Click **Yes** to delete the page and **No** or **Cancel** to keep the page.

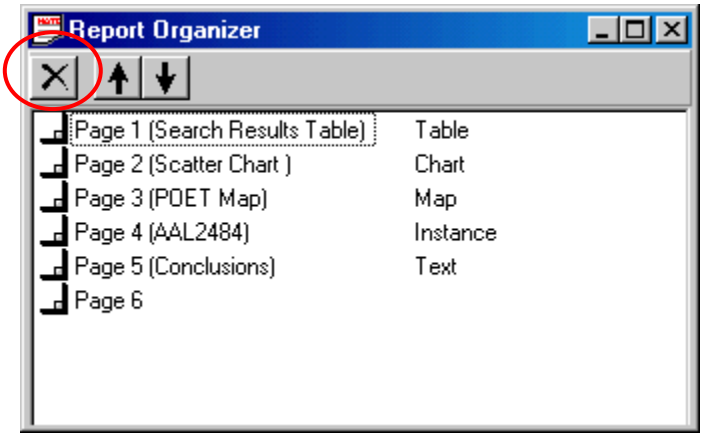


Figure 160: The Report Organizer

Complete Your Report

Once you have completed inserting all the pages for your report, you are ready to actually generate the report files. Select **Report > Generate** to generate the report files and complete your report. The report automatically opens in your default web browser and all you report files are saved to a folder in the directory you specified when you created the report.

You specified the report file when you started your report. That file is saved to the directory you specify. Within that directory, all the files POET generates for that report are saved in a folder with the same name as the first page of the report and the suffix "_res." For example, if you named your report file My_Report.htm, you will see My_Report.htm in the report directory you specify. You should also see a folder called My_Report_res that contains the other html and graphics files necessary for your report.

To view your report later, you must open the main report page in a web browser.

Sending A Report

To send a report to someone, you must include the original HTML file that you named for the report and the folder with the subsequent HTML and graphics files generated by POET. Each report is saved by default to its own folder in the My Reports folder in your POET directory. All the HTML files for a single report will be in this folder. Without all the necessary files, the report cannot be viewed in its entirety. For every page you create in the report, POET generates an HTML file based on the report file's name that you enter. For every chart and map that you include, POET generates a graphic file (jpg or gif) for the report. Any HTML or graphics file associated with your report must be available to view the entire report and preserve links.

To make it easier to save all your report files at once, you can zip the files together. To do this you must have WinZip or other compatible file compression program installed on your computer. Windows and NT users can use the computer explorer to find the report directory. Shift+ click or Ctrl+click all the report files you need. Right-click once all the files are selected and select **Add To Zip** from the pop-up menu. Specify a name and location for the zip file and click **Add** to add the files. When you need to send the report, simply send the single zip file. The recipient can then extract the files to their own computer and view your report.

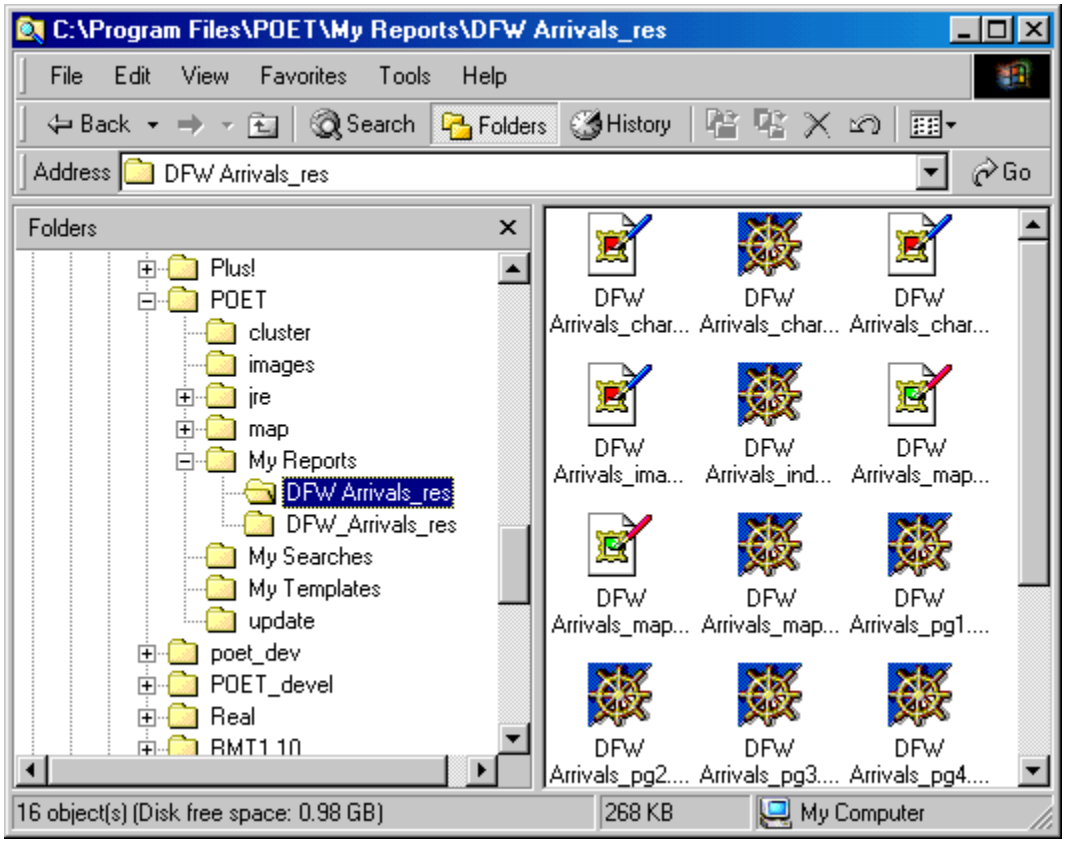


Figure 161: Files for a Single POET Report

INDEX